Water and Sanitation Concept Plans Volume I

First Edition

Northwest Territories Public Works and Highways Engineering Division

To the Reader:

One of our Government's highest priorities is the development of a safe and sanitary community environment for Northwest Territories' residents. In these times of continuing restraint combined with high northern costs and peculiar engineering problems, this is not an easy task. Therefore, towards maximizing the cost-effectiveness of our Government's expenditures on infrastructure, my Department is moving towards the standardization of buildings and works. The concept plans for water and sanitation presented in this document, form part of this direction.

Gordon W'ray
Minister

To the Reader:

The use of standard details for water and sanitation facilities is an accepted practice in southern Canadian municipalities. However, no such document containing standard details has existed previously in the Northwest Territories. The Territorial Department of Public Works and Highways has long recognized the need for these standards and this document is a result of that need. The water and sanitation concept plans presented in this report represent the 'state of the art' approach to water and sanitation in the Northwest Territories. They are the result of many years of evolution and field application.

Water supply and sewage collection systems of many types and materials have been installed in the Northwest Territories in the past. While not always successful, these have provided invaluable experience and have all contributed to the development of the concepts presented in this document.

The plans have been prepared to provide practical information towards the provision of water and sanitation facilities in the Northwest Territories. They are intended for use as a guide to designers, fabricators, and others involved in the delivery of water and sanitation systems. Their purpose is to minimize design time and expense, capital, operating and maintenance costs, and to maximize system reliability and efficiency.

These plans are to be used as a basis for detailed design and are not intended to be used as detail drawings in plans and specifications for construction. Although no effort has been spared in an attempt to ensure that all details and information are correct, 'site specific' conditions, and individual requirements will dictate the use of sound engineering judgement and practice in the proper application of these plans to the specific situation.

The drawings and sketches presented are designed to portray component details and concepts for servicing facilities in these five major areas: building services, water mains, sewer mains, access vaults, and truckfill stations.

As part of the Department's movement towards the standardization of buildings and works, these concept plans may eventually lead to the establishment of design and construction standards for water and sanitation services.

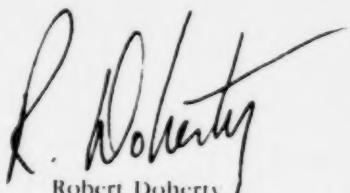
This document is presented as a first edition recognizing that it will require further improvement in subsequent editions. Therefore, the Department would appreciate receiving 'feedback' on the use of these plans and concepts.

Larry Elkin
Deputy Minister

Acknowledgements

A number of persons were involved with the preparation of the Water and Sanitation Concept Plans. Appreciation is expressed in particular to the following:

- Sukhi Cheema, Project Manager, Engineering Division, who initiated and co-ordinated the project and its final presentation as this document.
- Emery Wilson, Chief of Engineering, for his guidance and assistance, throughout the course of preparing this document.
- Reg Andres, Colin Anderson, Dwane Crawford, and Forrest Krause of the Engineering Division for their valuable contribution in the technical aspects of this presentation.
- Les Clegg, Chief of Operations, and Manu Khemani, Head of Buildings and Works, Operations Division for their critical review from an operational point of view.
- Underwood McLellan Limited who assisted the Department to develop this document.



Robert Doherty
Assistant Deputy Minister

Water and Sanitation Concept Plans Volume I

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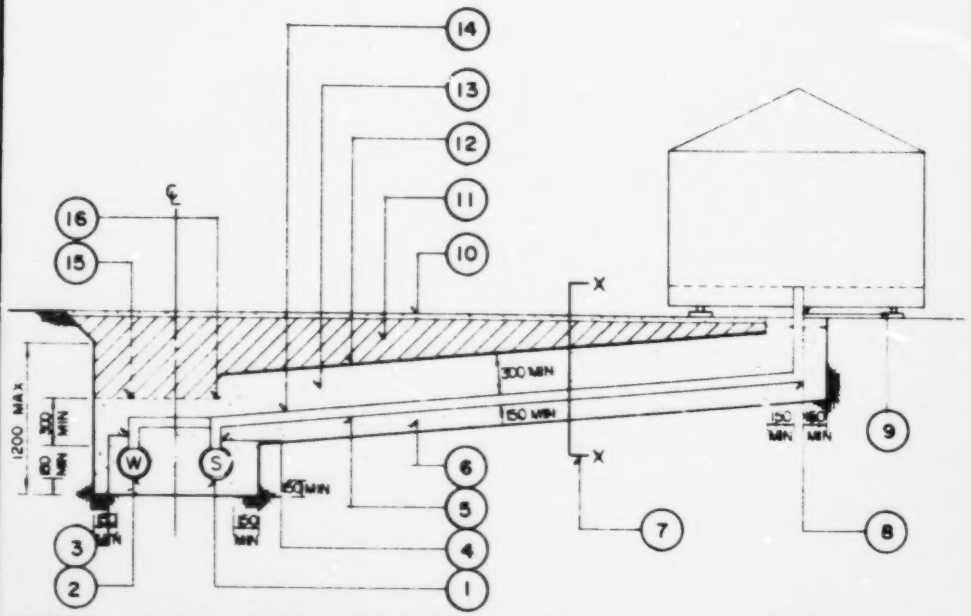
Division 1

Bedding Details for Water and Sewer Systems



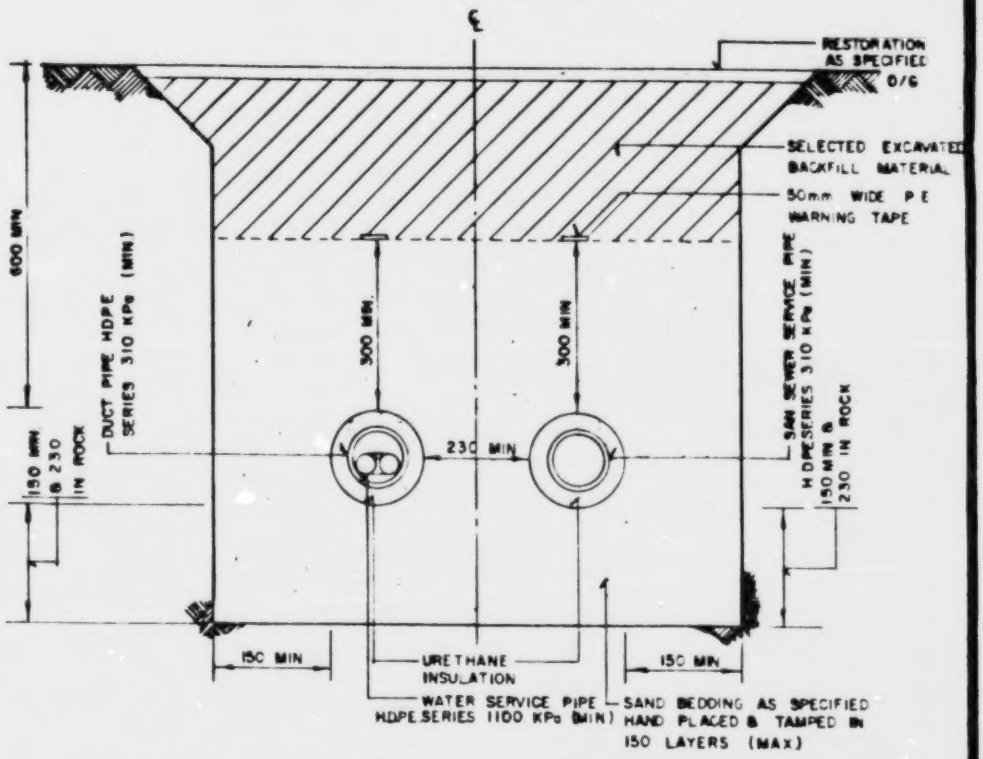
TYPICAL HOUSE WATER AND SANITARY SEWER SERVICE CONNECTION

NTS

KEY TO NUMBERED PARTS

1	SEE DRWGS S-2 & S-4	9	HOUSE FOUNDATION / SUPPORT
2	SEE DRWGS W-2, W-4 & W-5	10	RESTORATION (SEE DRWG B-2)
3	SEE DRWG W-2	11	BACKFILL MATERIAL
4	SEE DRWG S-1	12	WARNING TAPE
5	H.D.P.E WATER SERVICE PIPE	13	BEDDING MATERIAL
6	SEE DRWG B-2	14	H.D.P.E SANITARY SERVICE PIPE
7	SEE DRWG B-2	15	SEE DRWG B-2
8	SEE DRWGS S-3 & W-3	16	SEE DRWG B-2

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R J S
			DATE: 84/10/2
		TYPICAL BEDDING DETAILS	SCALE: N T S
			DRAWING NO: B-1


℄
RESTORATION AS SPECIFIED O/G
SELECTED EXCAVATED BACKFILL MATERIAL
50mm WIDE P E WARNING TAPE
600 MIN
DUCT PIPE HDPE SERIES 310 KPa (MIN)
300 MIN.
300 MIN
SAN SEWER SERVICE PIPE H DPE SERIES 310 KPa (MIN)
150 MIN @ 230 IN ROCK
230 MIN
150 MIN @ 230 IN ROCK
150 MIN
URETHANE INSULATION
150 MIN
WATER SERVICE PIPE HDPE SERIES 1100 KPa (MIN)
SAND BEDDING AS SPECIFIED HAND PLACED & TAMPED IN 150 LAYERS (MAX)

TYPICAL TRENCH SECTION – SERVICE CONNECTION

N T S

NOTES:

1. BEDDING MATERIAL SHALL BE COMPACTED TO 95% PROCTOR DENSITY
2. MAINTAIN THE MINIMUM COVER OF 600 (IF PERMITTED)
3. MAINTAIN THE MINIMUM GRADE OF 2% - SANITARY SEWER SERVICE CONNECTION
4. WARNING TAPE FOR WATER SERVICE CONNECTION SHALL BE BLUE IN COLOUR AND HAVE FACTORY APPLIED MARKINGS AT ONE METRE INTERVALS IE "CAUTION - BURIED WATER SERVICE LINE"
5. WARNING TAPE FOR SANITARY SEWER SERVICE CONNECTION SHALL BE GREEN IN COLOUR AND HAVE FACTORY APPLIED MARKINGS AT ONE METRE INTERVALS IE "CAUTION - BURIED SANITARY SEWER SERVICE LINE"
6. WATER SERVICE LINES SHALL BE CONTINUOUS AND WITHOUT JOINTS OR SPLICES BETWEEN TWO VALVES IE STREET SERVICE VALVE AND BUILDING STOP
7. ALL FUSION JOINTS SHALL BE MADE BY A QUALIFIED AND LICENSED JOINTING TECHNICIAN
8. JOINTS AND SPLICES SHALL NOT BE ALLOWED ON HEATING CABLES
9. IT SHOULD NOT BE CONSTRUED THAT THE TRENCH LIMITS AS SHOWN CONFORM TO SAFETY REGULATIONS GOVERNING SUCH TRENCHES
10. ALL DIMENSIONS ARE IN METRIC

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DATE	BY		APPROVED BY
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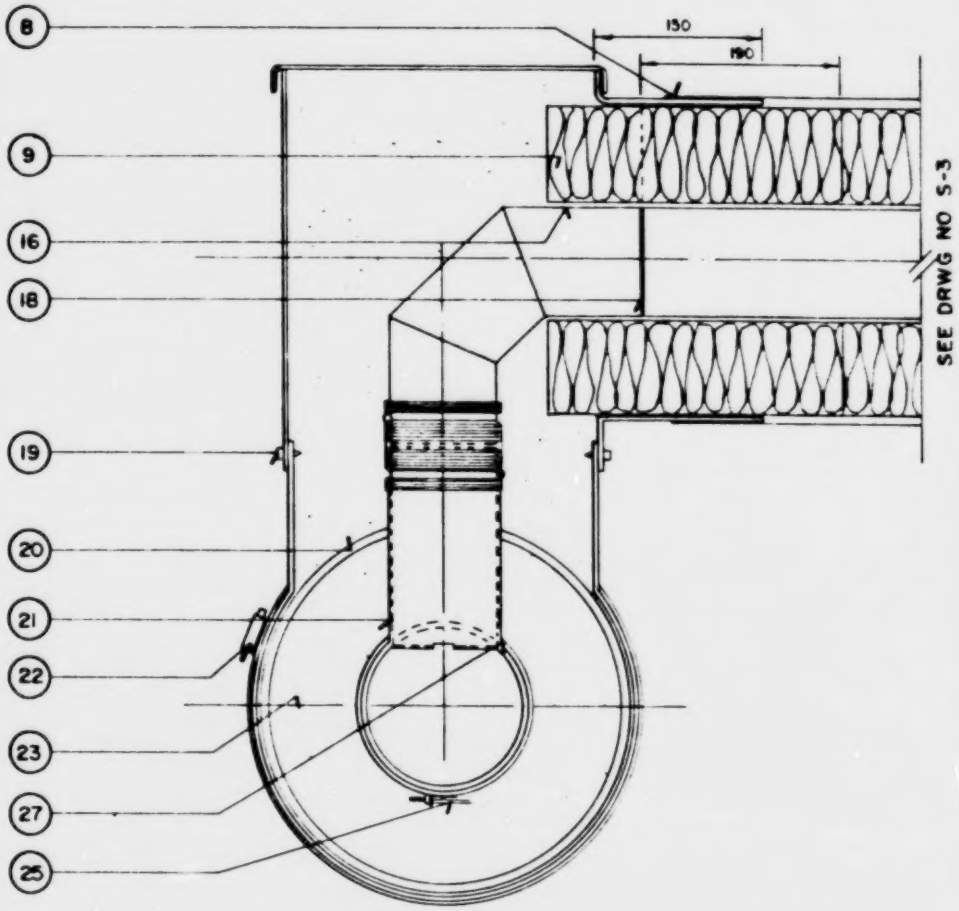
			DATE 84/09/25
		TYPICAL BEDDING DETAILS	SCALE N T S
			DRAWING NO B-2

Division 2

Sanitary Sewer Service Connection

NOTE 1 ALL DIMENSIONS ARE IN METRIC
2 SEE DRWG B-5 FOR KEY NUMBERED PARTS
3 SEE DRWG B-2 FOR FRONT VIEW



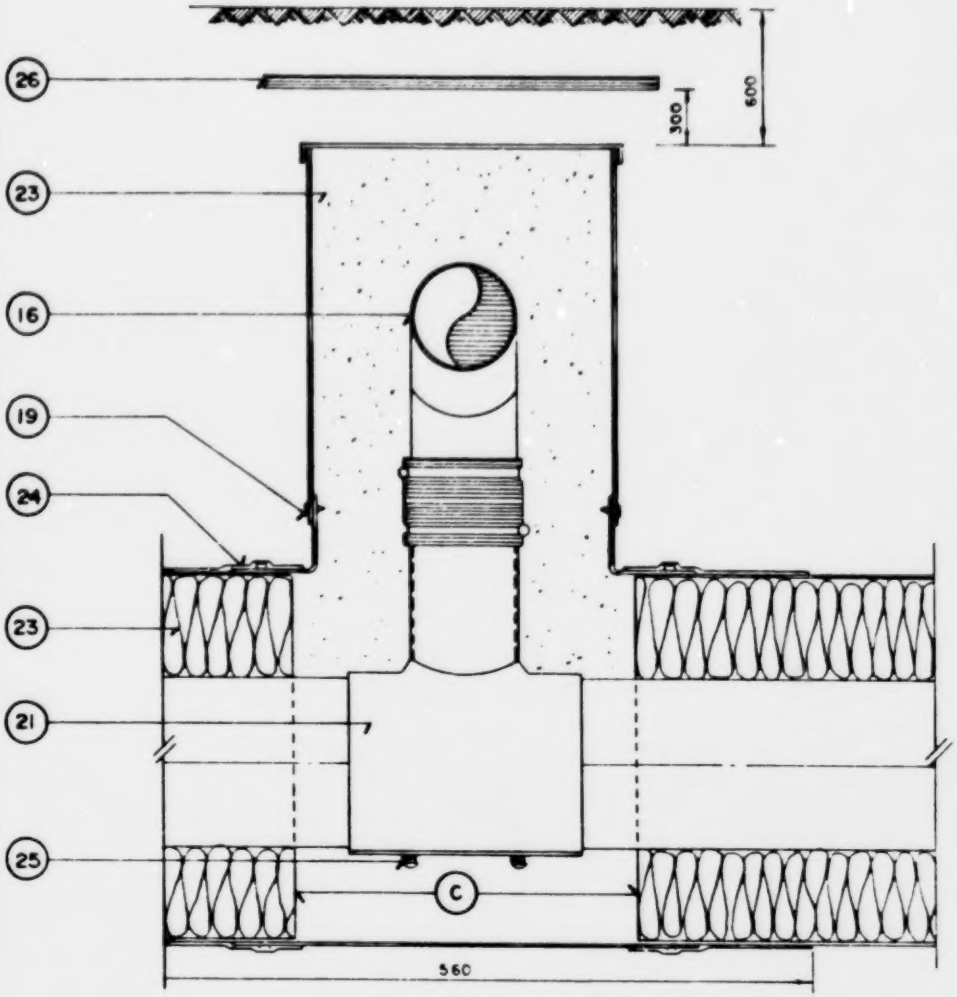
SEWER SERVICE CONNECTION AT MAIN

N T S

SIDE VIEW

REVISIONS		DEPARTMENT OF	CHECKED BY:
DATE	BY	PUBLIC WORKS & HIGHWAYS	APPROVED BY:
			DRAWN BY: R J S
		GOV'T OF THE N.W.T.	DATE: 84/09/20
		TYPICAL SEWER SERVICE	SCALE: N T S
			DRAWING NO. S-1

NOTE 1 ALL DIMENSIONS ARE IN METRIC
2 SEE DRWG NO S-5 FOR KEY NUMBERED PARTS
3 SEE DRWG S-1 FOR SIDE VIEW



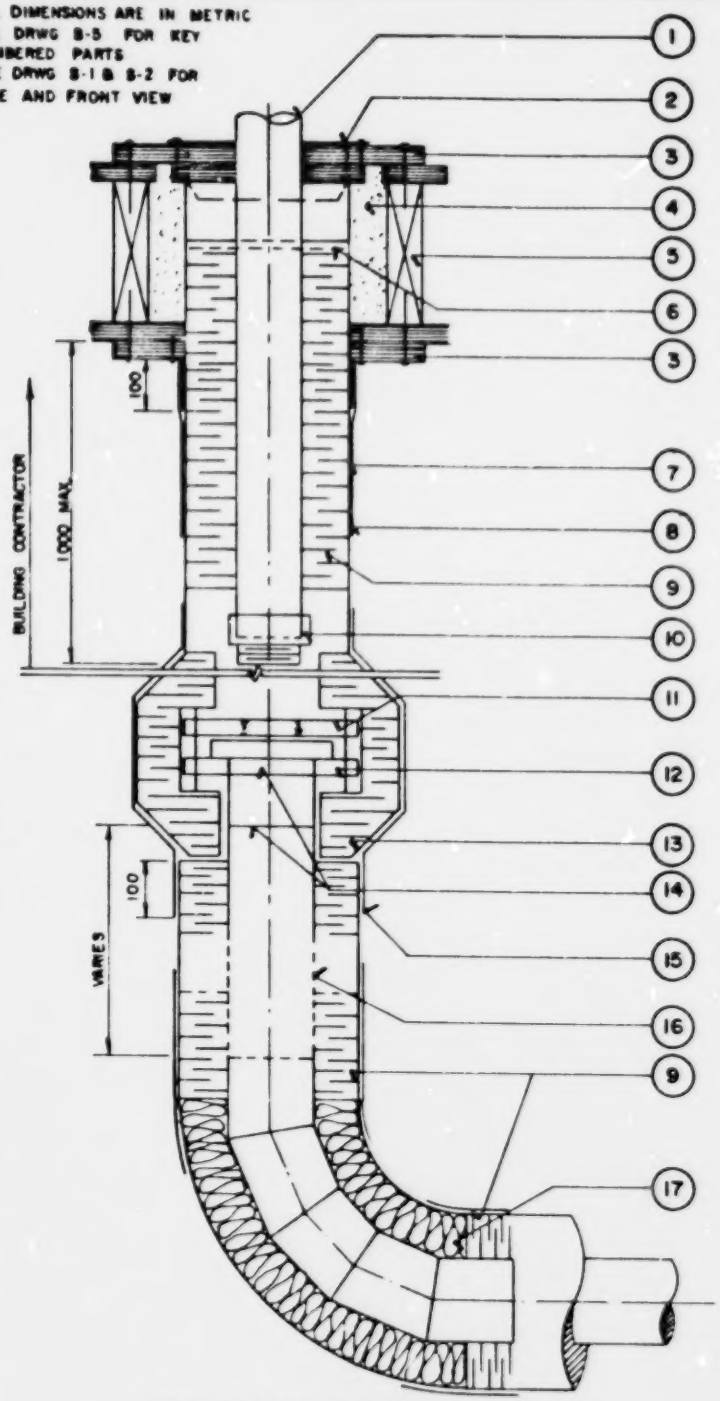
SEWER SERVICE STUB

N T S

FRONT VIEW

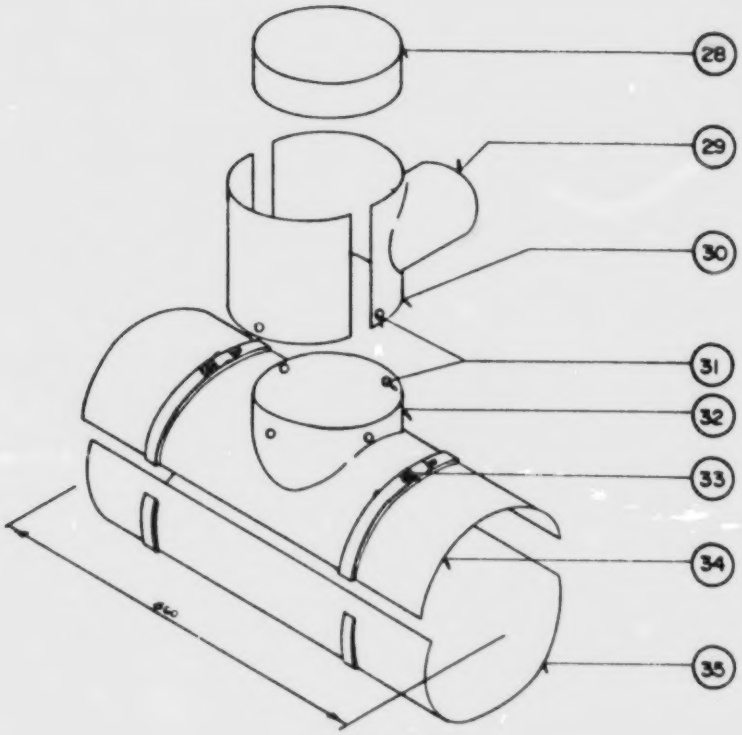
REVISIONS		DEPARTMENT OF	CHECKED BY	
DATE	BY	PUBLIC WORKS & HIGHWAYS	APPROVED BY	
			DRAWN BY	R J S
		GOV'T OF THE N.W.T.	DATE	84/09/20
		TYPICAL SEWER SERVICE	SCALE	N T S
			DRAWING NO	S-2

NOTE 1 ALL DIMENSIONS ARE IN METRIC
2 SEE DRWG S-5 FOR KEY NUMBERED PARTS
3 SEE DRWG S-1 & S-2 FOR SIDE AND FRONT VIEW



SANITARY SEWER RISER
NTS

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOVT OF THE N.W.T.	CHECKED BY	
DATE	BY		APPROVED BY	
			DRAWN BY	R J S
			DATE	84/09/21
		TYPICAL SEWER SERVICE	SCALE	NTS
			DRAWING NO	S-3



ISOMETRIC SEWER SERVICE STEEL INSULATION FORMS
NTS

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R J S
			DATE: 84 /09/24
		TYPICAL SEWER SERVICE	SCALE: N T S
			DRAWING NO: S-4

KEY TO NUMBERED PARTS

1. 75mm DIA PVC OR ASBESTOS PIPE
2. 200mm CHIMNEY CLEANOUT PLUG CUT HOLE TO FIT O D OF PIPE
3. 20mm PLYWOOD GLUED & SCREWED TO JOIST/STUDS AND HEADERS
4. URETHANE INSULATION FROM PORTABLE FOAM PACK
5. FLOOR JOIST
6. SILICON SEALER APPLIED TO THIS SECTION BEFORE INSERTING INSULATED PIPE INTO OPENING
7. 290mm GALV THIMBLE 22ga TOP & BOTTOM SCREWED TO PLYWOOD
8. HEAT SHRINK TO FIT 290 O D
9. URETHANE HALF SHELLS CUT TO LENGTH COATED WITH FIELD APPLIED MASTIC
10. 75mm DIA A35 MALE FITTING ADAPTER SOCKETS XMPT 75mm LONG
11. REDUCING FLANGE 75mm x 225mm x1030 KPa WITH RUBBER GASKET
12. BACK UP RING FOR FLANGE ADAPTER
13. INSULATION KIT FOR FLANGE ASSEMBLY SEE NOTE A
14. FLANGE ADAPTER BUTT FUSED TO 100mm PE PIPE
15. HEAT SHRINK TO FIT OVER INSULATION KIT ASSEMBLY
16. SANITARY SERVICE 100mm DIA STUB END SERIES 45 MIN
17. RIGID POLYURETHANE INSULATED FACTORY MADE HALF SHELLS TO FIT LONG RADIUS 90° ELL
18. FIELD BUTT FUSION JOINT
19. 4 FIELD APPLIED HEX HEAD METAL SCREWS
20. YELLOW / BLACK JACKET
21. 90° ENTRANCE STAINLESS - STEEL SEWER - TAPPING SADDLE
22. 2 SS GEAR CLAMPS HOLDING SS URETHANE FORM SADDLE
23. FIELD POUR URETHANE
24. MASTIC LINED HEAT SHRINK TAPE 100mm OVERLAP ON SHELLS AND PIPE JACKET
25. SADDLE - CLAMP HOLDING SEWER SADDLE TO PE PIPE
26. 600 x 600 x 12 mm PLYWOOD PAINTED FLUORESCENT ORANGE
27. HOLE FOR SERVICE TO BE DRILLED IN MAIN WITH HOLE SAW
28. SECURITY CAP
29. DIA TO SUIT INSULATED PIPE
30. 290 O D
31. HOLES TO BE DRILLED IN FIELD TO SUIT
32. 285 ⧫
33. DIA TO SUIT INSULATED PIPE
34. GEAR CLAMPS STAINLESS STEEL
35. DIA TO SUIT INSULATED PIPE O D & REQUIREMENT OF 25 mm ON BOTH SIDES

GENERAL NOTES:

A. 250 DIA HALF TEE SHALL BE SLIC ON SERVICE LATERAL PRIOR TO MAKING BUTT FUSION JOINT

B. PLASTIC MARKER TAPE 150 WIDE TO BE PLACED OVER ALL LATERALS (FLUORESCENT ORANGE)

C. ALL EXPOSED SURFACES COATED WITH FIELD APPLIED MASTIC-INCLUDE URETHANE

D. THE INSIDE SURFACES OF METAL SHALL BE COATED WITH OIL

E. ALL DIMENSIONS ARE IN METRIC

F. SEE DRWGS S-1, S-2, S-3, & S-4

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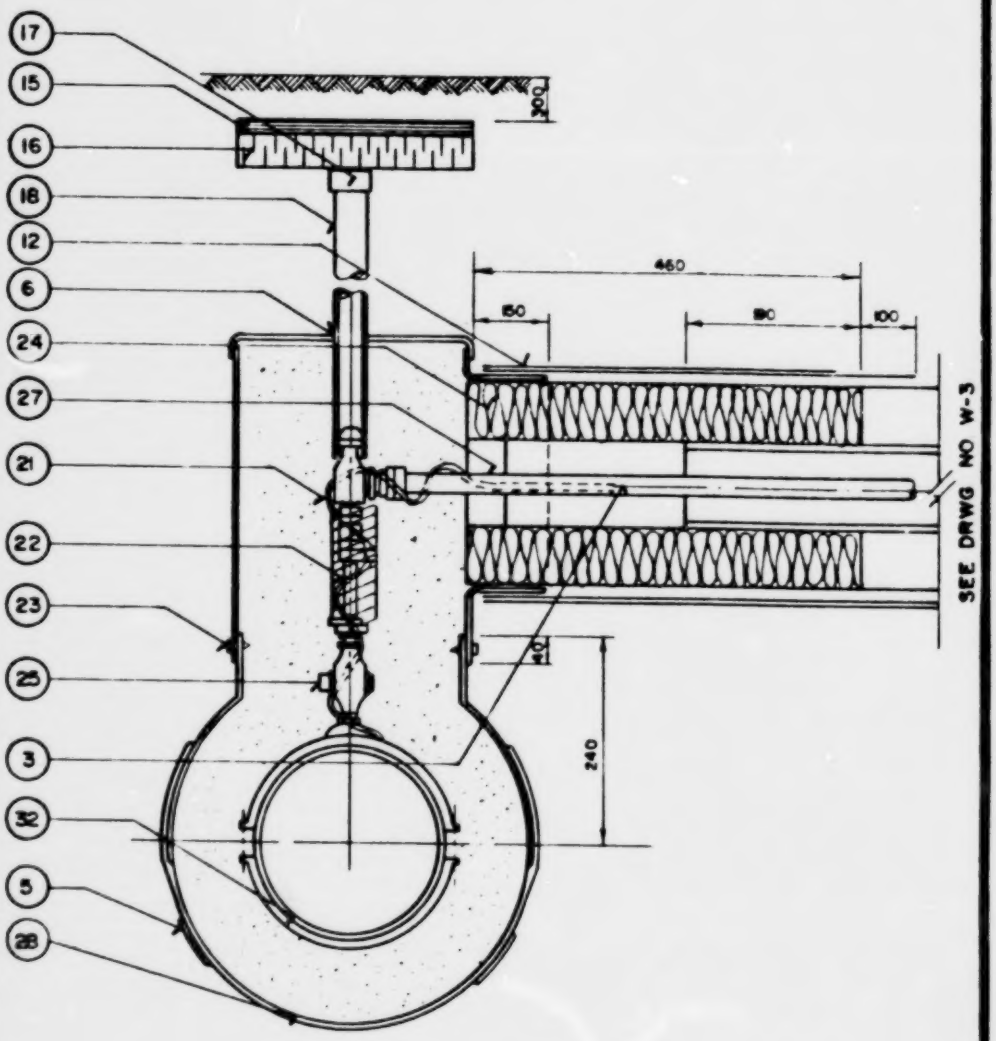
DATE	BY	PUBLIC WORKS & HIGHWAYS	APPROVED BY:	
			DRAWN BY:	R J S
		GOVT OF THE N.W.T.	DATE:	84/09/21
		TYPICAL SEWER SERVICE	SCALE:	N T S
			DRAWING NO:	S-5

Division 3

Water Service Connection

NOTE 1 ALL DIMENSIONS ARE IN METRIC
2 SEE DRAWING No W-7 & W-8 FOR KEY NUMBERED PARTS
3 SEE DRWG NO W-2 FOR FRONT VIEW



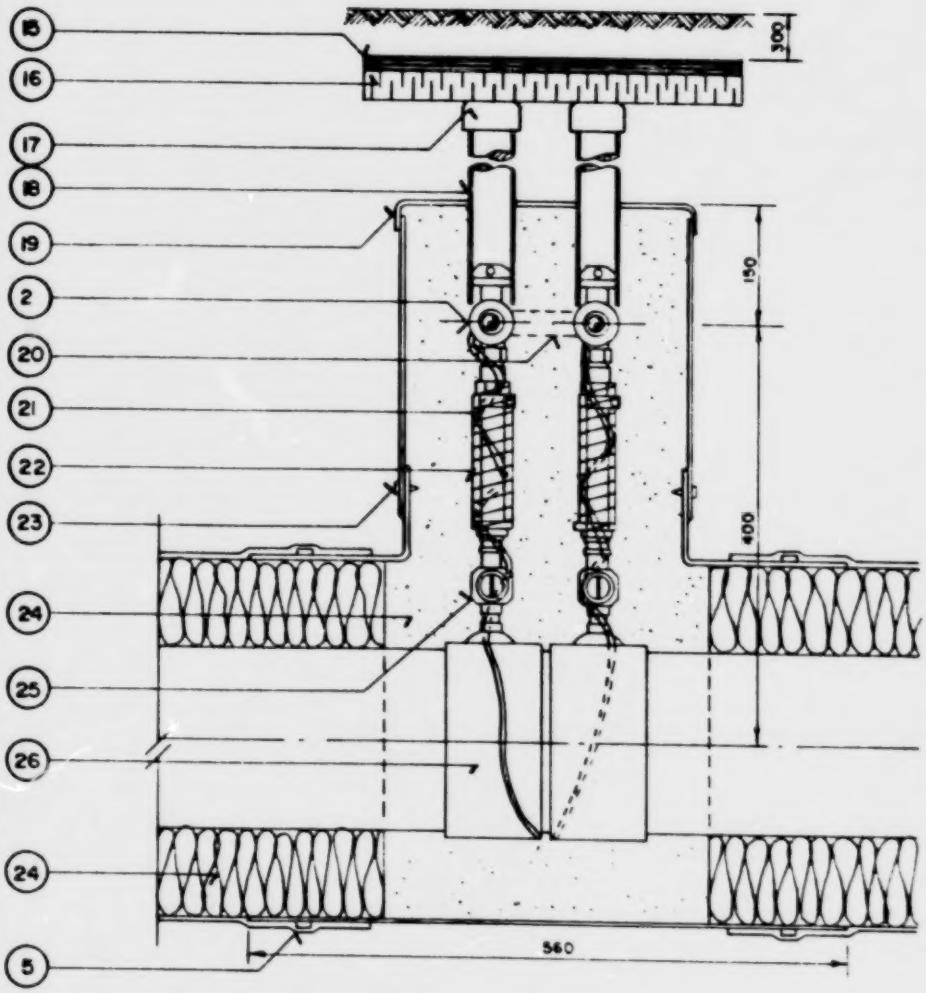
WATER SERVICE CONNECTION AT MAIN

NTS

SIDE VIEW

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY
DATE	BY		APPROVED BY
			DRAWN BY: R.J.S
			DATE: 84/09/12
		TYPICAL WATER SERVICE	SCALE: N.T.S
			DRAWING NO: W-1

NOTE 1 ALL DIMENSIONS ARE IN METRIC
2 SEE DRAWING NO W-7 & W-8 FOR KEY NUMBERED PARTS
3 SEE DRWG NO W-1 FOR SIDE VIEW



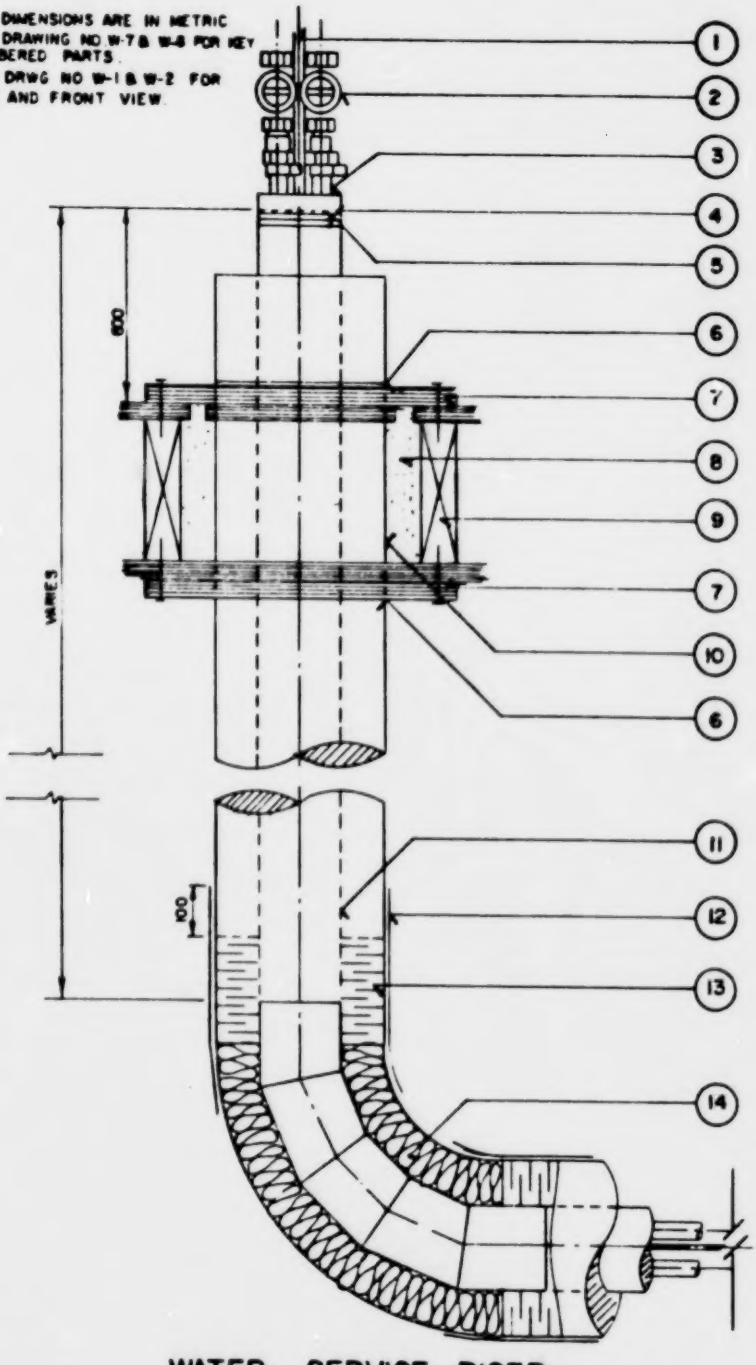
WATER SERVICE STUB

N.T.S

FRONT VIEW

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOVT OF THE N.W.T. TYPICAL WATER SERVICE	CHECKED BY	
DATE	BY		APPROVED BY	
			DRAWN BY	R J S
			DATE	84/09/12
			SCALE	N T S
			DRAWING NO	W-2

NOTE 1 ALL DIMENSIONS ARE IN METRIC
2 SEE DRAWING NO W-7 & W-8 FOR KEY NUMBERED PARTS.
3. SEE DRWG NO W-1 & W-2 FOR SIDE AND FRONT VIEW.

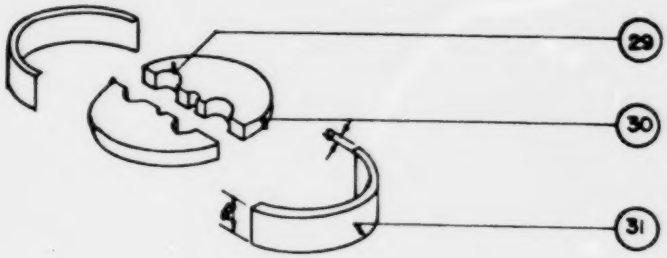


SEE DRAWINGS W-1 & W-2

WATER SERVICE RISER

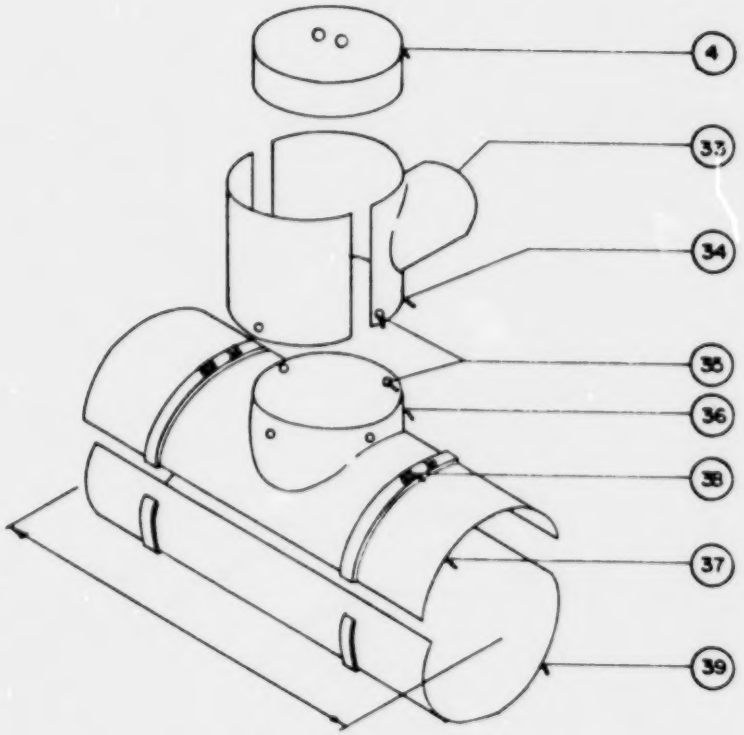
N T S

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R J S
		GOVT OF THE N.W.T.	DATE: 84/09/12
		TYPICAL WATER SERVICE	SCALE: N T S
			DRAWING NO: W-3



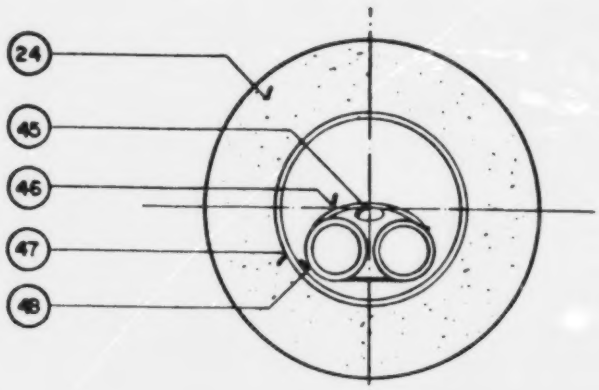
NOTE 1 ALL DIMENSIONS ARE IN METRIC
2 SEE DRWG NO W-7 & W-8 FOR KEY NUMBERED PARTS

SECURITY CAP
NTS

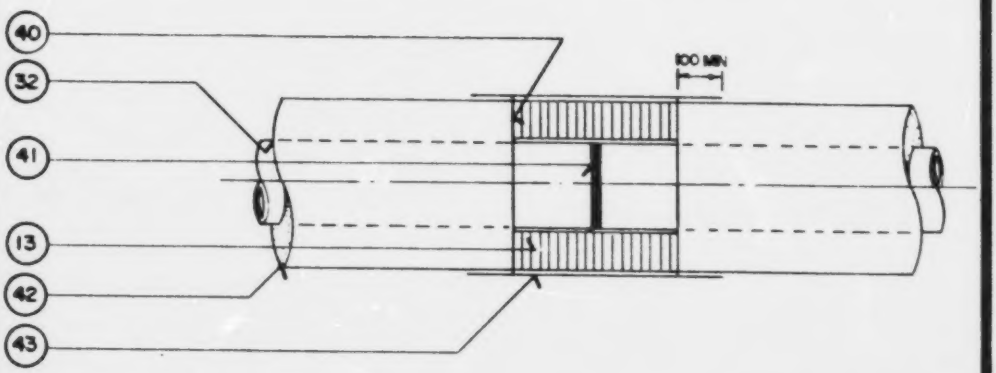


ISOMETRIC WATER SERVICE STEEL INSULATION FORMS
NTS

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY	
DATE	BY		APPROVED BY	
			DRAWN BY	R J S
			DATE	84/09/13
		TYPICAL WATER SERVICE	SCALE	NTS
			DRAWING NO	W-4



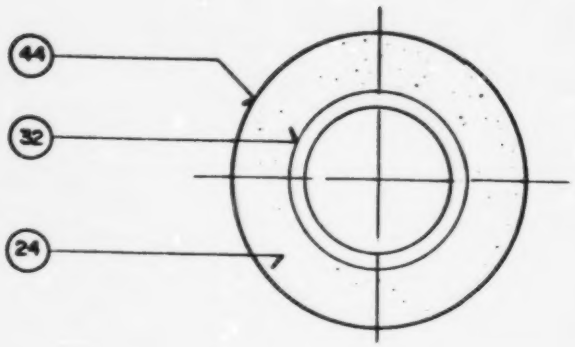
SECTION THROUGH WATER SERVICE
N.T.S



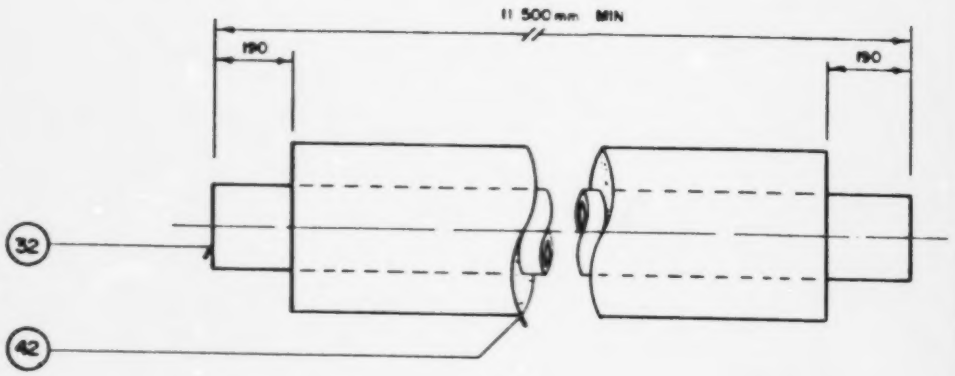
TYPICAL JOINT ON SERVICE CONNECTIONS
N.T.S

NOTE 1 ALL DRWGS ARE IN METRIC
2 SEE DRWGS W-1, W-2, W-3, W-4 FOR DETAILS
3 FOR KEY NUMBERED PARTS SEE DRWG NO W-7& W-8

REVISIONS		DEPARTMENT OF	CHECKED BY:
DATE	BY	PUBLIC WORKS & HIGHWAYS	APPROVED BY:
			DRAWN BY: R J S
		GOV'T OF THE N.W.T.	DATE: 84/09/17
		TYPICAL WATER SERVICE	SCALE: N T S
			DRAWING NO: W-5



SECTION OF MAINS
SCALE 1:5



TYPICAL WATERMAIN OR SEWERMAIN PIPE
N T S

NOTE 1 ALL DRWGS ARE IN METRIC
2 SEE DRWG NO W-7 & W-8 FOR KEY NUMBERED PARTS.

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DATE	BY		APPROVED BY.
			DRAWN BY. R J S
			DATE. 84/09/17
		TYPICAL WATER SERVICE	SCALE. AS SHOWN
			DRAWING NO. W-6

KEY TO NUMBERED PARTS:

1. 2 000mm EXCESS HEATING CABLE TO BE LEFT AT DWELLING END
2. 20mm BALL VALVES
3. 20mm PE SUPPLY & RECIRCULATION PIPE
4. SECURITY CAP
5. SS. GEAR CLAMP HOLDING SECURITY CAP IN PLACE
6. CAULK WITH SILICON ALL AROUND
7. 20mm PLYWOOD GLUED & SCREWED TO JOIST / STUDS AND HEADERS
8. URETHANE INSULATION FROM PORTABLE FOAM PACK TO FILL VOID
9. FLOOR JOIST
10. FIBERGLASS REINFORCED PLASTIC THIMBLE
11. WATER SERVICE CARRIER PIPE 100 mm DIA SERIES 45 MIN
12. HEAT SHRINK TO FIT 290 OD
13. URETHANE HALF SHELLS CUT TO LENGTH AND COATED WITH APPLIED MASTIC
14. RIGID POLYURETHANE INSULATED FACTORY MANUFACTURED HALF SHELLS TO FIT LONG RADIUS 90° ELL
15. PLYWOOD 600 x 600 x 12 mm PAINTED FLURESCENT ORANGE
16. 75 mm THICK STYROFOAM
17. METAL PIPE CAPS
18. 50 PE PIPE VALVE EXTENSION FIELD CUT TO LENGTH AND FILLED WITH SILICON GREASE
19. REMOVABLE GALV SHEET METAL CAP
20. BLOCK AND TIE PIPE TO PREVENT MOVEMENT DURING URETHANE CASTING
21. HEATING CABLE WRAPPED AROUND SERVICE RISER AND MAIN
22. HEAT TRANSFER TAPE
23. 4 FIELD APPLIED SHEET METAL SCREWS
24. POURED URETHANE 345 KPa COMPRESSION STRENGTH
25. 20 MAIN STOP MALE THREAD TO BE COMPATABLE WITH FEMALE TAPPING INTO THE SADDLE
26. TAPPING SADDLES FOR HOPE PIPE
27. PLUG
28. BOTTOM INSULATION FORM OF 760 x 560 GALV. SHEET STEEL
29. HOLES TO FIT 20 mm P E LINES
30. 20 mm PLYWOOD TO FIT PIPE O.D
31. 22 ga SHEET METAL GALV
32. 200 SERIES 860 KPa P E WATERMAIN WITH 380 O.D. INSULATION

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METRIC
2. SEE DRWGS W-1, W-2, & W-3
3. ALL EXPOSED SURFACES INCLUDE URETHANE TO BE FIELD COATED WITH MASTIC
4. THE INSIDE SURFACES OF METAL SHALL BE COATED WITH OIL

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:	
DATE	BY		APPROVED BY:	
			DRAWN BY:	R J S
			DATE:	84/09/13
		TYPICAL WATER SERVICE	SCALE:	N T S
			DRAWING NO:	W-7

KEY TO NUMBERED PARTS:

(4)	SECURITY CAP 295 DIA	(41)	BUTT FUSION JOINT ON MAIN
(33)	DIA TO SUIT INSULATED PIPE O D	(13)	URETHANE HALF SHELLS
(34)	290 DIA	(42)	YELLOW JACKET & SHOP CAST URETHANE INSULATION
(35)	HOLES TO BE DRILLED IN FIELD TO SUIT	(43)	HEAT SHRINK SLEEVE MIN 100mm LAP ON YELLOW JACKET AFTER SHRINKAGE
(36)	285 DIA	(44)	YELLOW JACKET
(37)	DIA TO SUIT INSULATED PIPE O D	(32)	200 ø P E I P S SERIES 860 KPa WATERMAIN OR 150 ø P E I P S SERIES 100 OR 688 KPa SEWER
(38)	GEAR CLAMPS STAINLESS STEEL	(24)	URETHANE INSULATION 337 O D ON 200 ø PIPE, 283 O D ON 150 ø PIPE
(39)	DIA TO SUIT INSULATED PIPE O D AND REQUIREMENT OF 25mm LAP ON EACH SIDE	(45)	SELF LIMITING HEATING CABLE WITH TEFLON JACKET
(40)	FIELD COAT ALL EXPOSED URETHANE WITH MASTIC	(46)	TWO FULL TURNS OF POLYESTER PACKAGING TAPE APPLY EVERY 2m MIN
(32)	MAIN (POLYETHYLENE PIPE)	(47)	100 P E SERIES 440 KPa CARRIER PIPE BUTT FUSED IN FIELD
		(48)	FIELD INSTALLED 20 P E SERIES 1100 KPa WATER SERVICE PIPES OF COIL STOCK CONTINUOUS LENGTHS

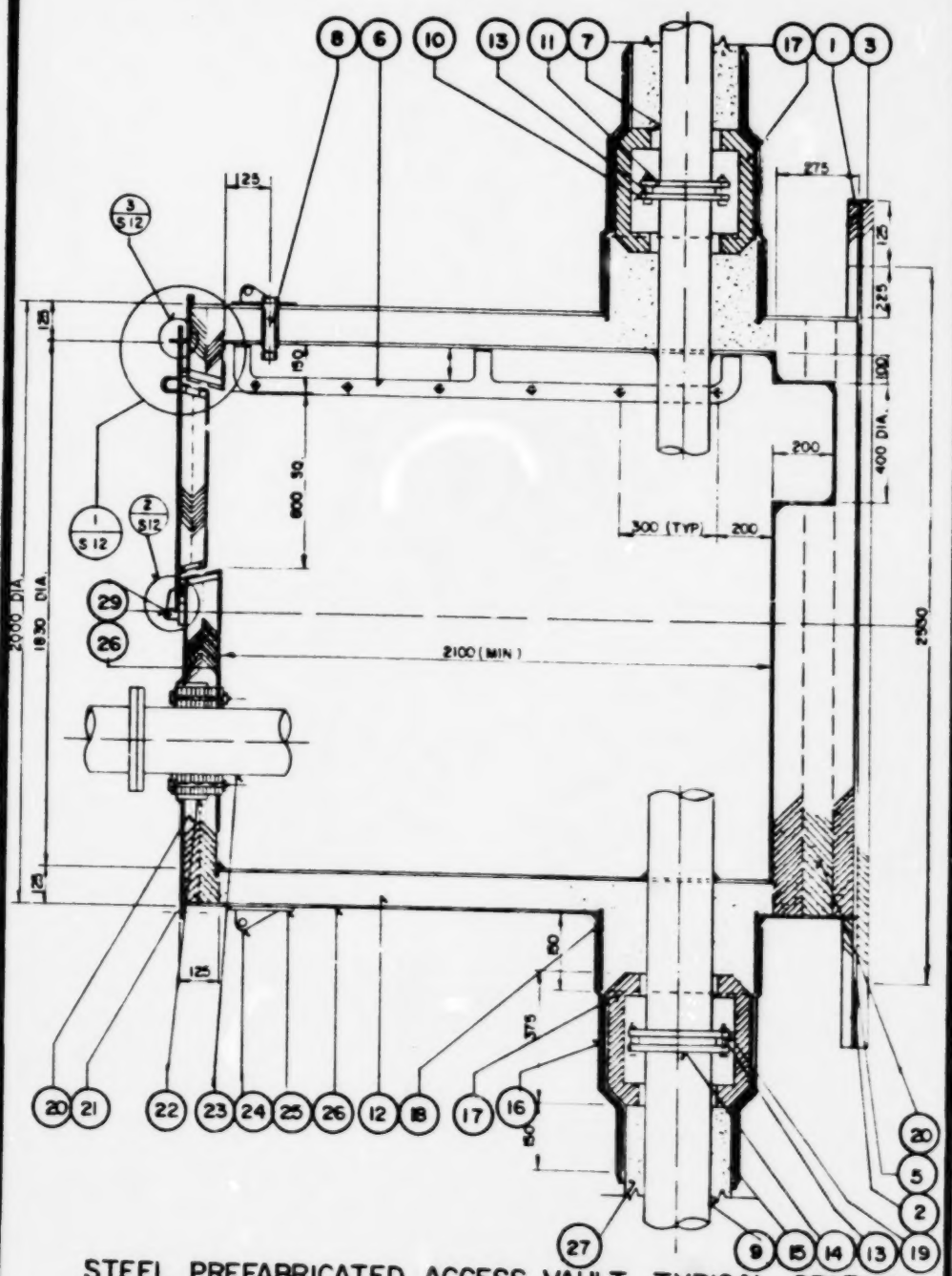
GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METRIC
2. SEE DRWGS W-5, W-6, & W-7
3. ALL WATER AND SEWER PIPES WILL HAVE MARKER TAPE 300mm ABOVE PIPE MARED EITHER BURRIED OR WATER PIPE

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R.J.S
		GOV'T OF THE N.W.T.	DATE: 84/09/18
		TYPICAL WATER SERVICE	SCALE: N.T.S
			DRAWING NO: W-8

Division 4

Steel Access Vaults and Appurtenances

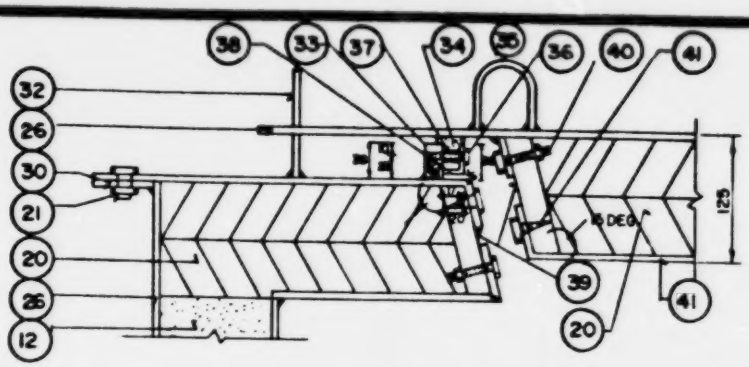


STEEL PREFABRICATED ACCESS VAULT TYPICAL SECTION

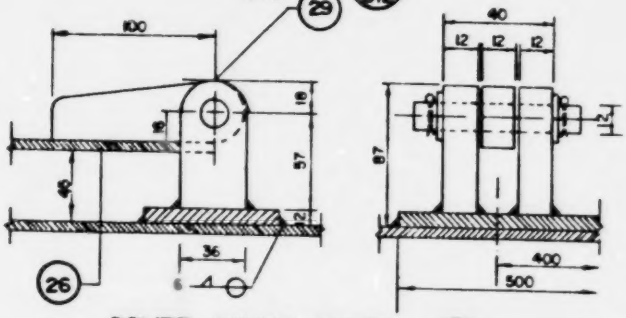
N.T.S

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:	
DATE	BY		APPROVED BY:	
			DRAWN BY:	R J S
			DATE:	84/09/25
		TYPICAL ACCESS VAULT	SCALE:	N.T.S
			DRAWING NO	AV-1

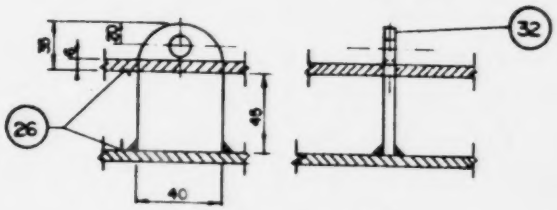
.../21



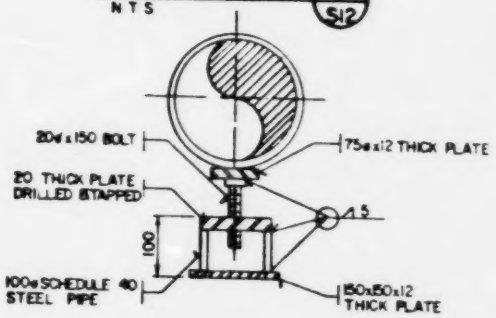
DETAIL 1 (S12)
NTS



COVER HINGE DETAIL 2 (S12)
NTS

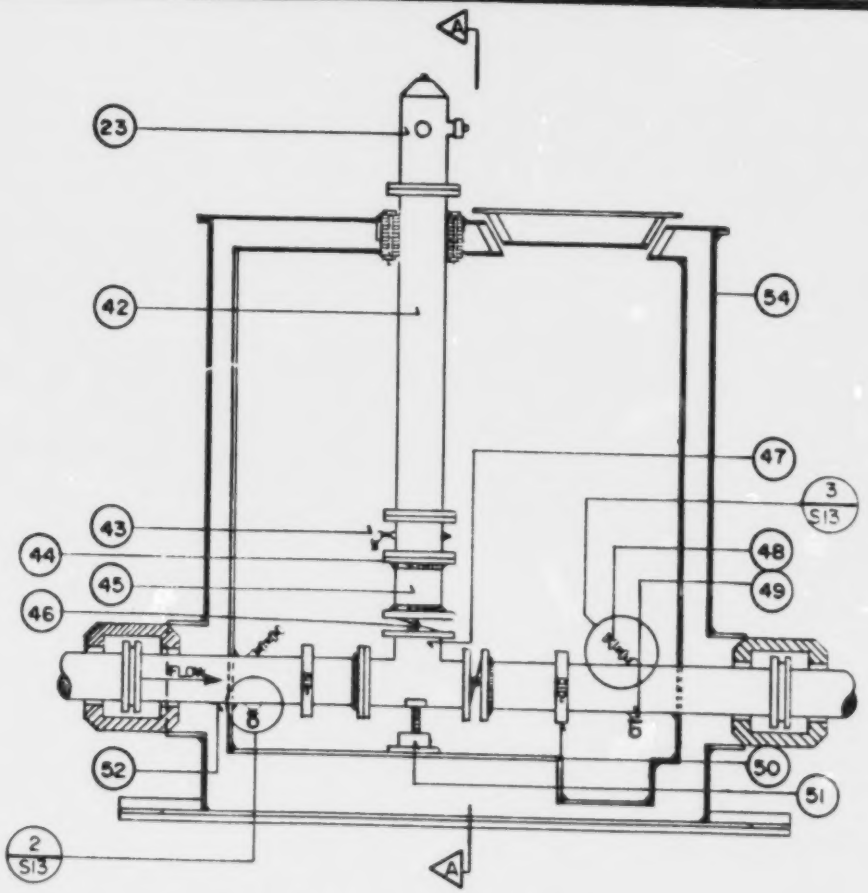


HASP DETAIL 3 (S12)
NTS

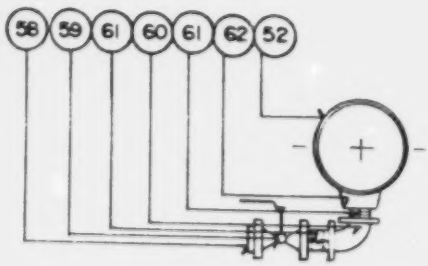


PIPE SUPPORT DETAIL 4 (S12)
NTS

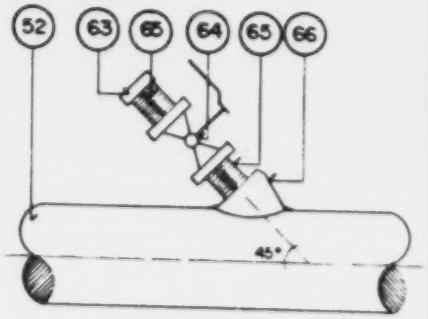
REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:	
DATE	BY		APPROVED BY:	
			DRAWN BY:	R J S
			DATE:	84/09/26
		TYPICAL ACCESS VAULT	SCALE:	N T S
			DRAWING NO:	AV-2



TYPICAL HYDRANT DETAIL

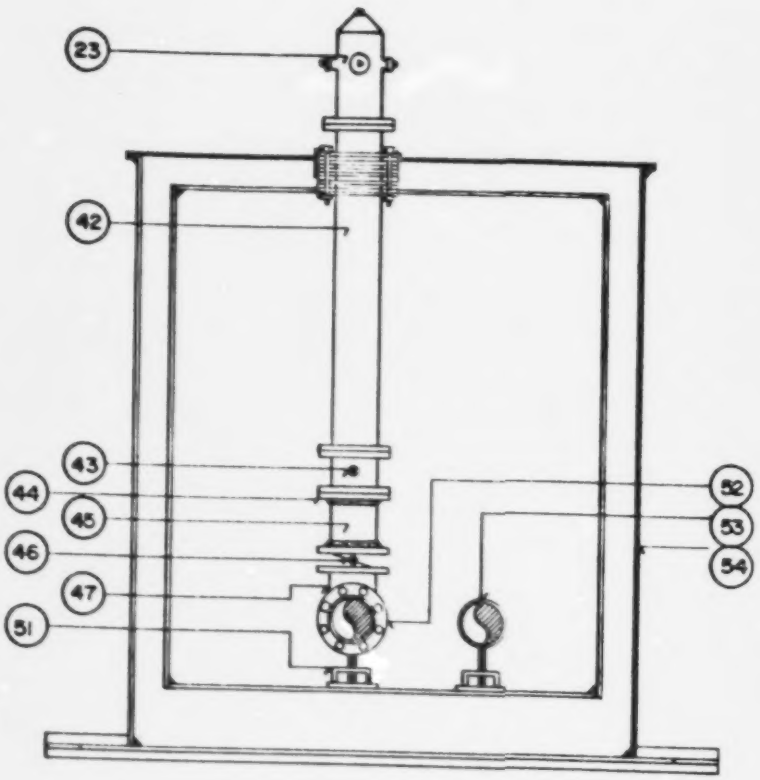


WATERMAIN DRAIN DETAIL (2 S13)
(TYPICAL)

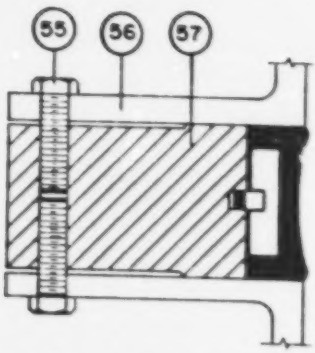


LATEROLET CONNECTION DETAIL (3 S13)
(TYPICAL)

REVISIONS		DEPARTMENT OF PUBLICWORKS & HIGHWAYS GOV'T OF THE N.W.T. TYPICAL ACCESS VAULT	CHECKED BY.	
DATE	BY		APPROVED BY.	
			DRAWN BY.	R J S
			DATE.	84/09/27
			SCALE.	N T S
			DRAWING NO.	AV-3

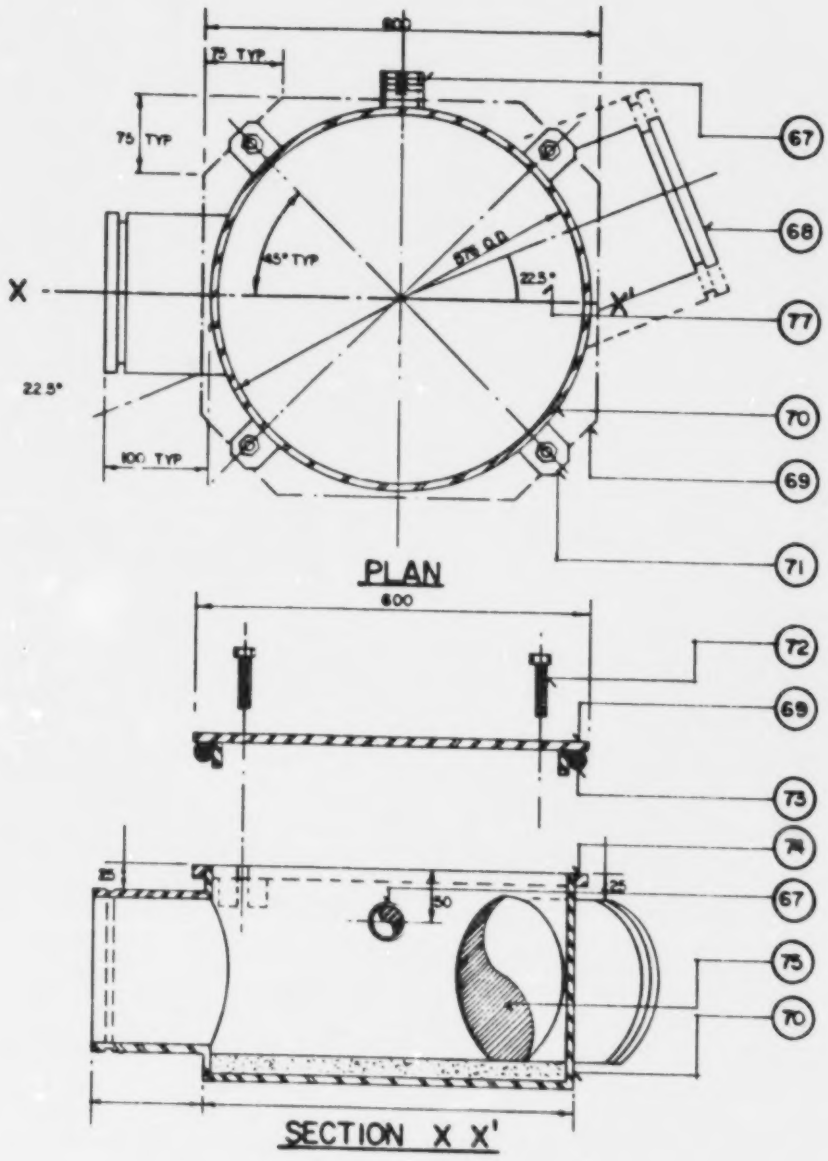


SECTION A A'



CAP SCREW DETAIL FOR LUG TYPE BUTTERFLY VALVE (1 / S13)

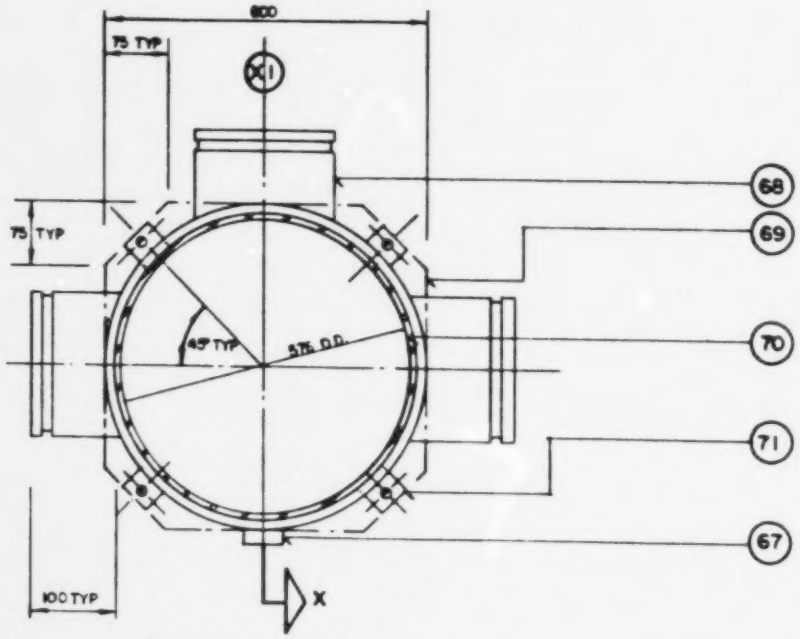
REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:	
DATE	BY		APPROVED BY:	
			DRAWN BY:	R J S
			DATE:	84/09/27
		TYPICAL ACCESS VAULT	SCALE:	N T S
			DRAWING NO:	AV-4



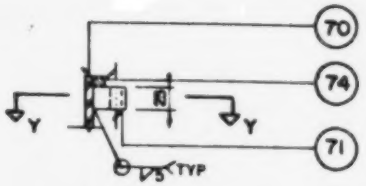
CLEANOUT - TYPE 1 & BOLT LUG DETAIL

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R J S
			DATE: 84/09/28
		TYPICAL ACCESS VAULTS	SCALE: N T S
			DRAWING NO: AV-5

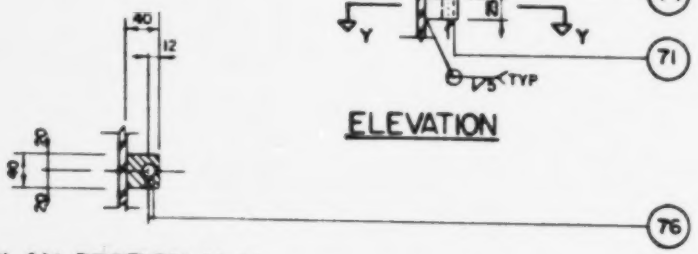
.../25



PLAN (TEE)



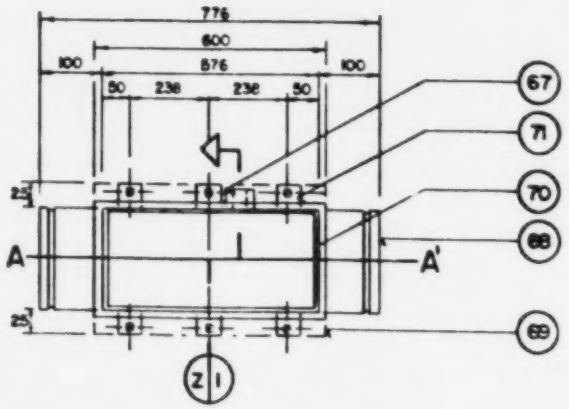
ELEVATION



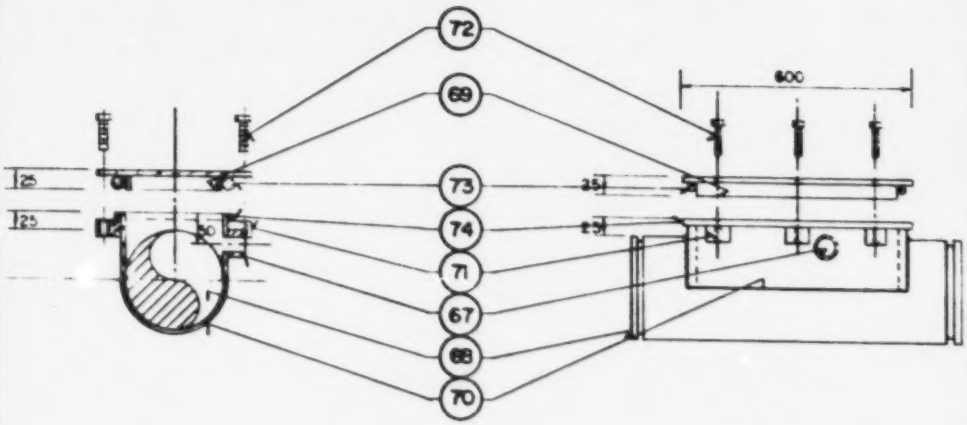
PLAN SECTION Y-Y

CLEANOUT – TYPE 1 & BOLT LUG DETAIL

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R J S
		GOV'T OF THE N.W.T.	DATE: 84/10/1
		TYPICAL ACCESS VAULTS	SCALE: N T S
			DRAWING NO: AV-6



PLAN

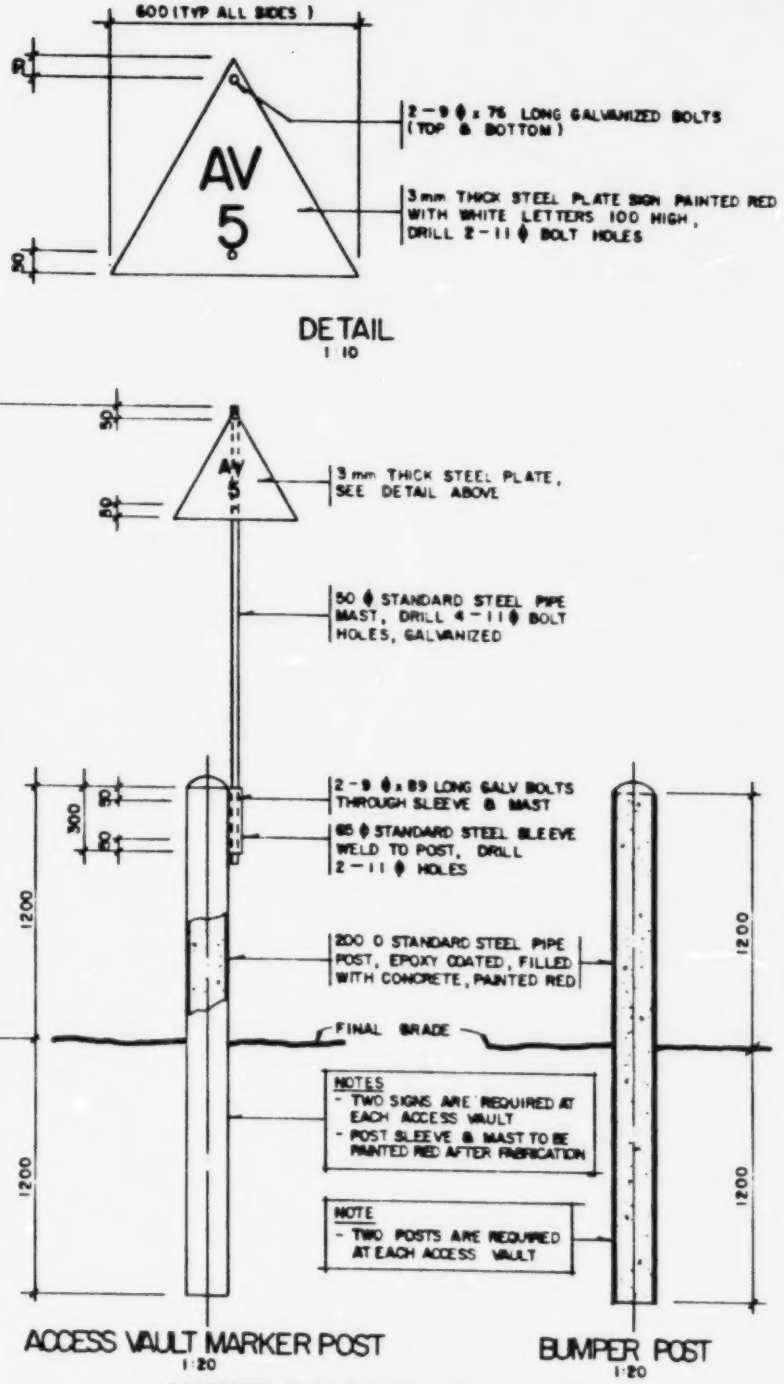


SECTION Z-Z

SECTION A-A'

CLEANOUT - TYPE 2

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R J S
			DATE: 84/10/1
		TYPICAL ACCESS VAULTS	SCALE: N T S
			DRAWING NO: AV-7

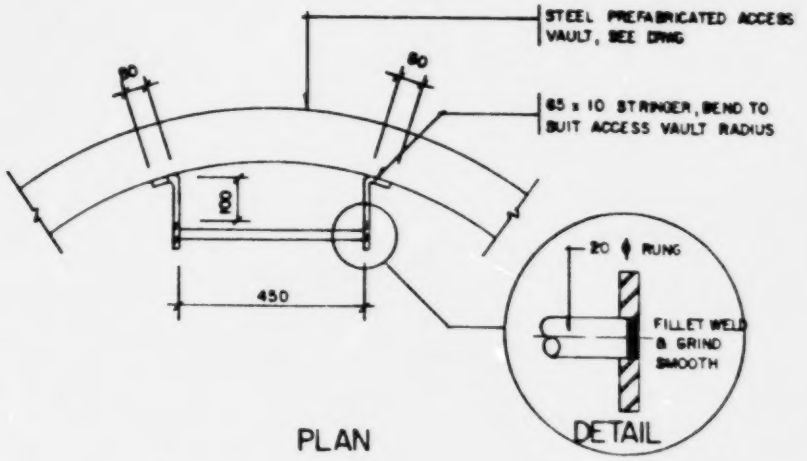

600 (TYP ALL SIDES)
AV
5
2 - 9 ϕ x 75 LONG GALVANIZED BOLTS (TOP & BOTTOM)
3 mm THICK STEEL PLATE SIGN PAINTED RED WITH WHITE LETTERS 100 HIGH, DRILL 2 - 11 ϕ BOLT HOLES
DETAIL
1:10
3 mm THICK STEEL PLATE, SEE DETAIL ABOVE
50 ϕ STANDARD STEEL PIPE MAST, DRILL 4 - 11 ϕ BOLT HOLES, GALVANIZED
3000
2 - 9 ϕ x 89 LONG GALV BOLTS THROUGH SLEEVE & MAST
65 ϕ STANDARD STEEL SLEEVE WELD TO POST, DRILL 2 - 11 ϕ HOLES
300
1200
200 ϕ STANDARD STEEL PIPE POST, EPOXY COATED, FILLED WITH CONCRETE, PAINTED RED
FINAL GRADE
NOTES
- TWO SIGNS ARE REQUIRED AT EACH ACCESS VAULT
- POST SLEEVE & MAST TO BE PAINTED RED AFTER FABRICATION
NOTE
- TWO POSTS ARE REQUIRED AT EACH ACCESS VAULT
ACCESS VAULT MARKER POST
1:20
BUMPER POST
1:20

MARKER & BUMPER POST DETAILS

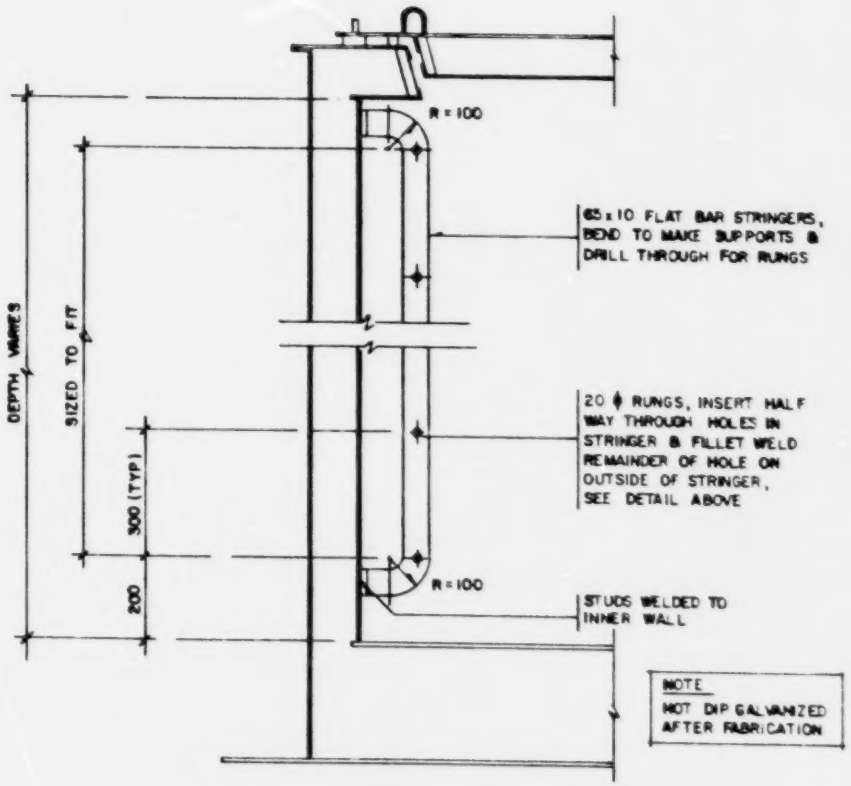
AS SHOWN

REVISIONS		DEPARTMENT OF	CHECKED BY
DATE	BY	PUBLIC WORKS & HIGHWAYS	APPROVED BY
			DRAWN BY R.J.S.
		GOV'T OF THE N.W.T.	DATE 84/10/1
		TYPICAL ACCESS VAULTS	SCALE N.T.S.
			DRAWING NO AV-8

.../28



PLAN


R = 100
65 x 10 FLAT BAR STRINGERS, BEND TO MAKE SUPPORTS & DRILL THROUGH FOR RUNGS
DEPTH VARIES
SIZED TO FIT
300 (TYP)
200
20 ϕ RUNGS, INSERT HALF WAY THROUGH HOLES IN STRINGER & FILLET WELD REMAINDER OF HOLE ON OUTSIDE OF STRINGER, SEE DETAIL ABOVE
R = 100
STUDS WELDED TO INNER WALL
NOTE
HOT DIP GALVANIZED AFTER FABRICATION

ELEVATION

ACCESS VAULT LADDER DETAIL

1 : 10

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R.J.S.
			DATE: 84/10/1
		TYPICAL ACCESS VAULT	SCALE: N.T.S.
			DRAWING NO: AV-9

KEY TO NUMBERED PARTS:

1. 38 THICK STYROFOAM CUT TO MATCH EXTERIOR WALL RADIUS
2. FILLER PIECE 10 THICK INSULATION
3. 38 THICK x 2830 x 2850 STYROFOAM INSULATION
4. PIPE SUPPORT SEE DETAIL 2/AV-2
5. 10 THICK x 2830 STEEL BASE PLATE
6. LADDER LENGTH AS REQUIRED, 450 WIDE MADE FROM 65 x 12 FLAT BARS, VERTICALS AND SUPPORTS WITH 20 Ø RINGS
7. 150 ø IPS SIZE HDPE PIPE
8. 50 ø THREADED P.E NIPPLE FOR ELECTRICAL CONDUIT C/W CAPS
9. 200 IPS SIZE H.D.P.E PIPE
10. 150 Ø 1030 KPa SLIP ON FLANGE, F.S FLAT FACE AS A B 16.1 WELDED TO STEEL PIPE
11. SLIP ON BACK-UP RING FOR 150 H.D.P.E PIPE & STUBEND C/W GASKET
12. FORMED IN PLACE URETHANE INSULATION
13. Ø BOLTS — ASTM A307 GRADE B CARBON STEEL
14. SLIP ON BACK-UP RING FOR 200 H.D.P.E. PIPE & STUBEND C/W GASKET
15. FIRST LAYER OF HEAT SHRINK TAPE (0.09" THICK BLACK POLYETHYLENE SELF ADHES)
16. SECOND LAYER OF HEAT SHRINK TAPE (SAME AS 15 ABOVE)
17. INSULATED COVER FOR FLANGE ASSEMBLY
18. STEEL RING SECTION WELDED TO MANHOLE OUTER WALL & THICK x 470 I.D PROTRUDING 150
19. 200 Ø 1030 KPa SLIPE ON FLANGE F.S FLAT FACE AS A B16.1 WELDED TO STEEL PIPE
20. URETHANE SHEET INSULATION CUT TO SIZE
21. 12 CAD PLATED STEEL BOLT, NUT, WASHER, 32 AT EQUAL SPACING
22. 350 Ø SCHEDULE 10 (346.05 I.D.) STEEL PIPE x 100 LONG WELDED TO MANHOLE, GALVANIZED
23. 200 Ø HYDRANT
24. LIFTING LUGS TWO PER ACCESS VAULT 150 x 75 x 12 THICK WITH 38 Ø LIFTING EYE
25. REINFORCING PLATE 200 x 200 x 12 CURVED TO EXTERIOR WALL RADIUS
26. 6 THICK STEEL PLATE ACCESS VAULT CONSTRUCTION
27. URETHANE PIPE INSULATION
28. LINK SEAL
29. HINGES SPACED AT 400 APART — SEE DETAIL
30. 10 THICK x 50 x 2080 I.D STEEL RING C/W 3 x 50 COMPRESSIBLE NEOPRENE RUBBER GASKET
31. Ø 12 30 PAN HEAD SHEET METAL SCREWS AT 100 SPACING
32. HASP ASSEMBLY SEE DETAIL 3/AV-2
33. 12 x 38 x 500 STEEL BAR UNDER HINGES
34. 20 x 38 SOFT COMPRESSIBLE NEOPRENE GASKET (CLOSED CELL)
35. LIFTING EYE 12 Ø x 40 INSIDE LOOP
36. 6 x 31 CAD PLATED STEEL BOLT 150 SPACING
37. 6.5 x 17 SPACER
38. 3 x 32 x 20 GALVANIZED IRON

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T	CHECKED BY
DATE	BY		APPROVED BY
			DRAWN BY R.J.S
			DATE: 84/10/1
		TYPICAL ACCESS VAULTS	SCALE: N.T.S
			DRAWING NO: AV-10

.../30

KEY TO NUMBERED PARTS:

(39) 20 THICK HIGH DENSITY POLYETHYLENE SHEET

(40) 6 GALVANIZED BOLT, NUT AND WASHER AT 1000 SPACING

(41) 20 GAUGE METAL

(42) HYDRANT BARREL

(43) HYDRANT DRAIN

(44) 1034 KPa SLIP-ON WELD FLANGE

(45) 2000 LONG SPOOL PIECE

(46) LUG TYPE BUTTERFLY VALVE C/W WHEEL OPERATOR

(47) 1034 KPa CAST IRON TEE (COLD TAR EPOXY COATED)

(48) LATEROLET CONN DETAIL - SEE DETAIL 3/AV-3

(49) WATERMAIN DRAIN DETAIL - SEE DETAIL 2/AV-3

(50) VICTAULIC COUPLING

(51) PIPE SUPPORT — SEE DETAIL 4/AV-2

(52) WATERMAIN

(53) SANITARY SEWER (TYP.)

(54) FOR TYPICAL ACCESS VAULT CONSTRUCTION SEE DRAWING AV

(55) CAP SCREWS (CADMIUM PLATED)

(56) 1034 KPa FLANGE

(57) BUTTERFLY VALVE SECTION

(58) 25 Ø N.P.T PLUG

(59) 25 Ø BALL VALVE

(60) 25 Ø - 90° GALVANIZED ELBOW

(61) 25 Ø N.P.T NIPPLE

(62) 25 Ø THREADOLET

(63) 50 Ø N.P.T CAP

(64) 50 Ø BALL VALVE

(65) 50 Ø N.P.T NIPPLE

(66) 50 Ø LATEROLET

(67) 25 N.P.T HALF COUPLING

(68) STANDARD 40 STEEL PIPE NIPPLE VICTAULIC GROOVED

(69) FABRICATE CLEANOUT COVER FROM 6 THICK PLATE CONTINUOUS BUTT WELDED AND HOT DIPPED GALVANIZED AFTER FABRICATION

(70) FABRICATE CLEANOUT BODY FROM 6 THICK PLATE CONTINUOUS BUTT WELDED AND HOT DIPPED GALVANIZED AFTER FABRICATION

(71) BOLT LUGS TAPPED

(72) 1/2 in NC x 2 in LONG CAD PLATED HEX HEAD CAP SCREW

(73) 20 Ø ONE PIECE 80FT RUBBER GASKET STRETCH TO FIT COVER

(74) 12 SQ ROD RIM

(75) ASPHALT COATED MORTAR FILL BOTTOM AND SIDES TO MATCH BOTTOM HALF OF SEWER

(76) DRILL AND TAP 1/2 in N C

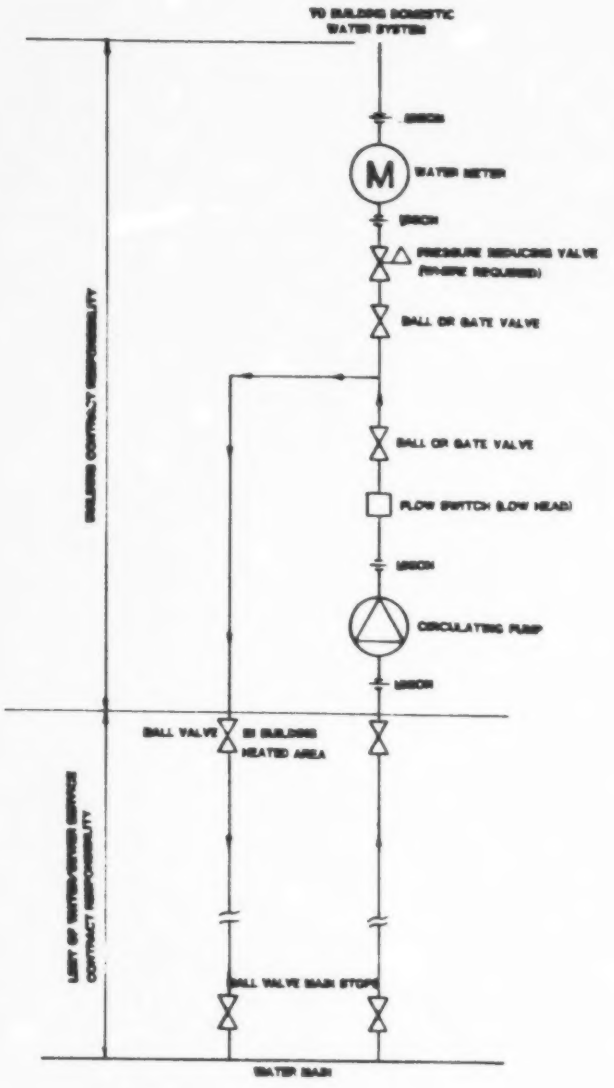
(77) 22.5° MAX ROTATION OF PRE STUBS WHERE REQUIRED

(78) COVER OUTLINE

REVISIONS		DEPARTMENT OF	CHECKED BY
DATE	BY	PUBLIC WORKS & HIGHWAYS	APPROVED BY
			DRAWN BY R.J.S
		GOV'T OF THE N.W.T	DATE 84/10/1
		TYPICAL ACCESS VAULTS	SCALE N.T.S
			DRAWING NO AV-11

Division 5

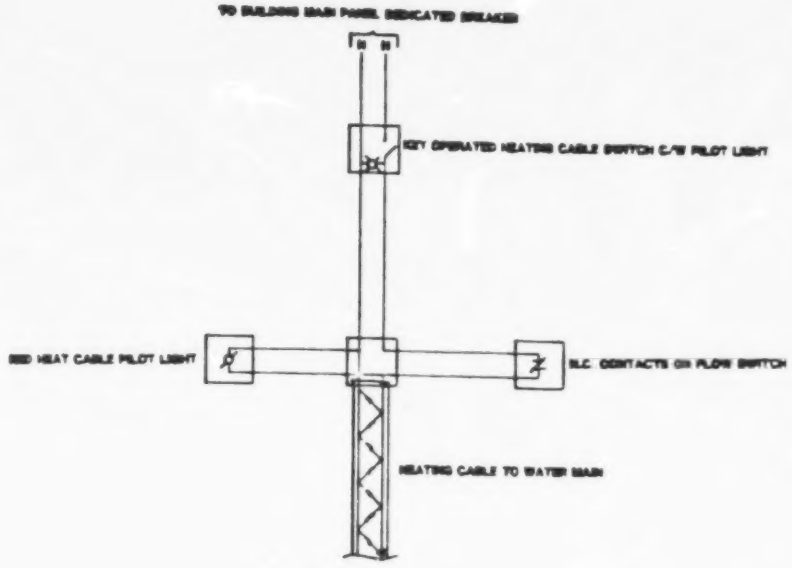
Water Recirculation Services



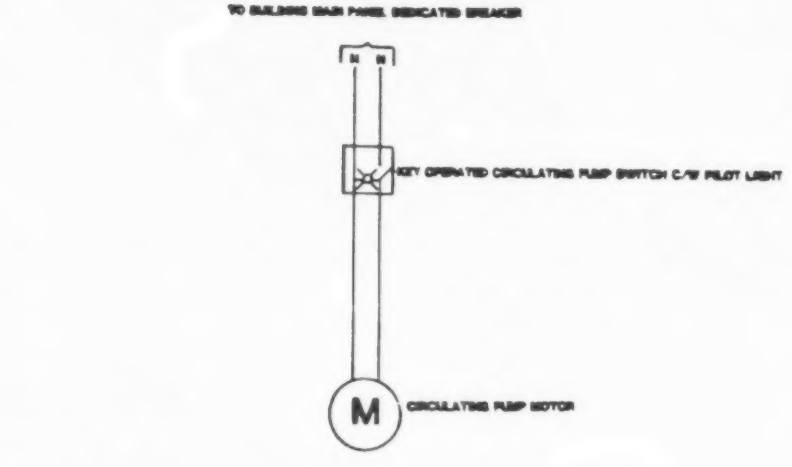
MECHANICAL DETAIL

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T. WATER RECIRCULATION	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R J S
			DATE: 84/10/9
			SCALE: N T S
			DRAWING NO: WR-1

.../33


TO BUILDING MAIN PANEL DEDICATED BREAKER
N
N
KEY OPERATED HEATING CABLE SWITCH C/W PILOT LIGHT
RED HEAT CABLE PILOT LIGHT
N.C. CONTACTS ON FLOW SWITCH
HEATING CABLE TO WATER MAIN

ELECTRICAL DETAIL
HEATING CABLE

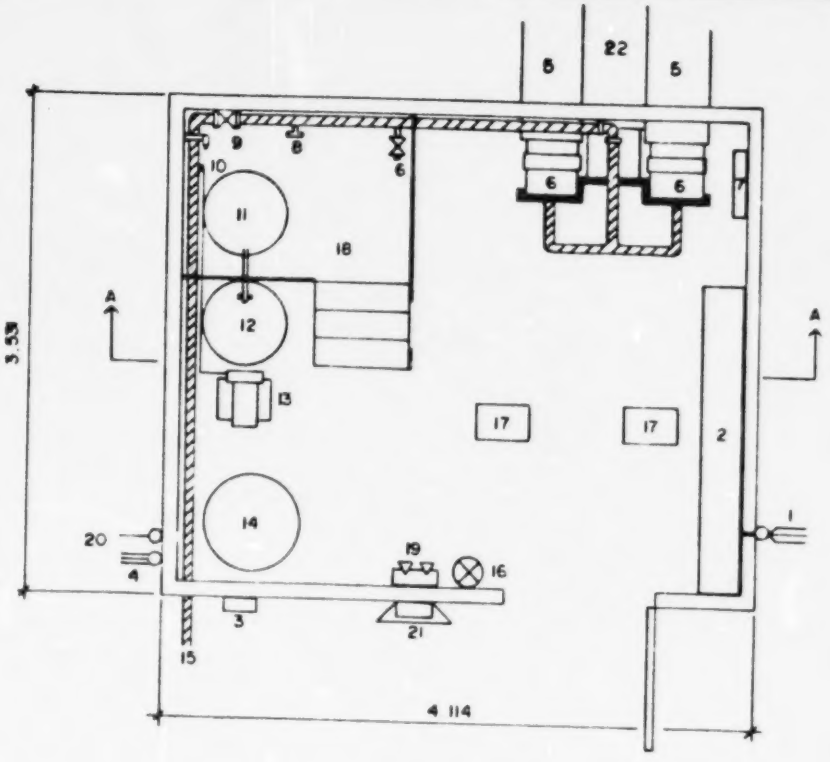


ELECTRICAL DETAIL
CIRCULATING PUMP

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: R J S
		GOV'T OF THE N.W.T.	DATE: 84/10/19
		WATER RECIRCULATION	SCALE: N T S
			DRAWING NO: WR-2

Division 6

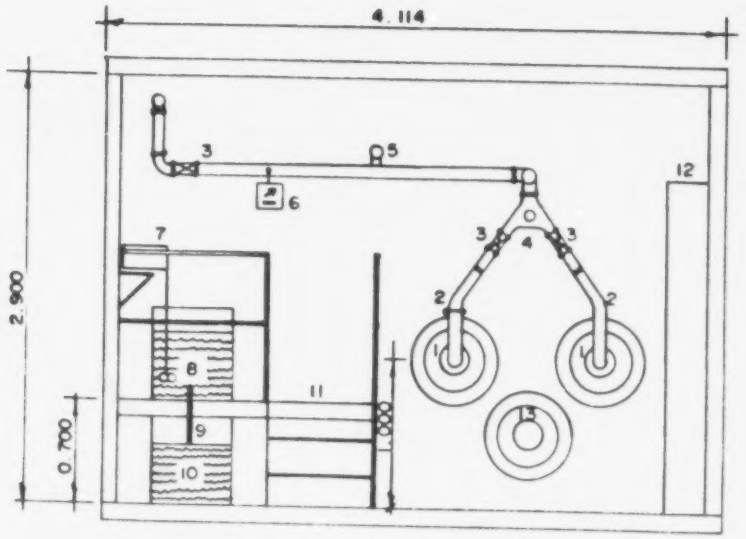
Truckfill Station



1. MAIN ELECTRICAL SERVICE
2. ELECTRICAL PANELS
3. TRUCK FILL CONTROL PANEL
4. POWER TO/FROM POWER BLDG
5. INTAKES
6. BACKWASH HOSE CONNECTION
7. BACKWASH HOSE STORAGE
8. FLOWMETER
9. CHLORINE PUMP FLOW SWITCH
10. CHLORINE INJECTOR
11. CHLORINE MIX TANK
12. CHLORINE TANK
13. CHLORINE PUMP
14. CHEMICALS
15. DISCHARGE TO TRUCK
16. FIRE EXTINQUISHER
17. WINCH FLOOR BRACKETS
18. ACCESS PLATFORM
19. EMERGENCY LIGHT
20. TO REMOTE EMERGENCY LIGHT
21. EXTERIOR LIGHT
22. SUBDRAIN PUMP SHAFT (IF REQUIRED)

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY
DATE	BY		APPROVED BY
			DRAWN BY D.W.W
			DATE: 85/7/25
		TRUCKFILL BLDG. PLAN VIEW	SCALE: N.T.S
			DRAWING NO TS-1

.../36



1 POLYETHYLENE 75° BEND

2 45° BEND

3 VALVES

4 FLAPPER BALL VALVES

5 BACKWASH HOSE CONNECTION

6 FLOWMETER (WALL MOUNTED)

7 IMPELLOR TYPE MIXER (WALL MOUNTED)

8 CHLORINE MIX TANK

9 PLASTIC DECANT PIPE & VALVE

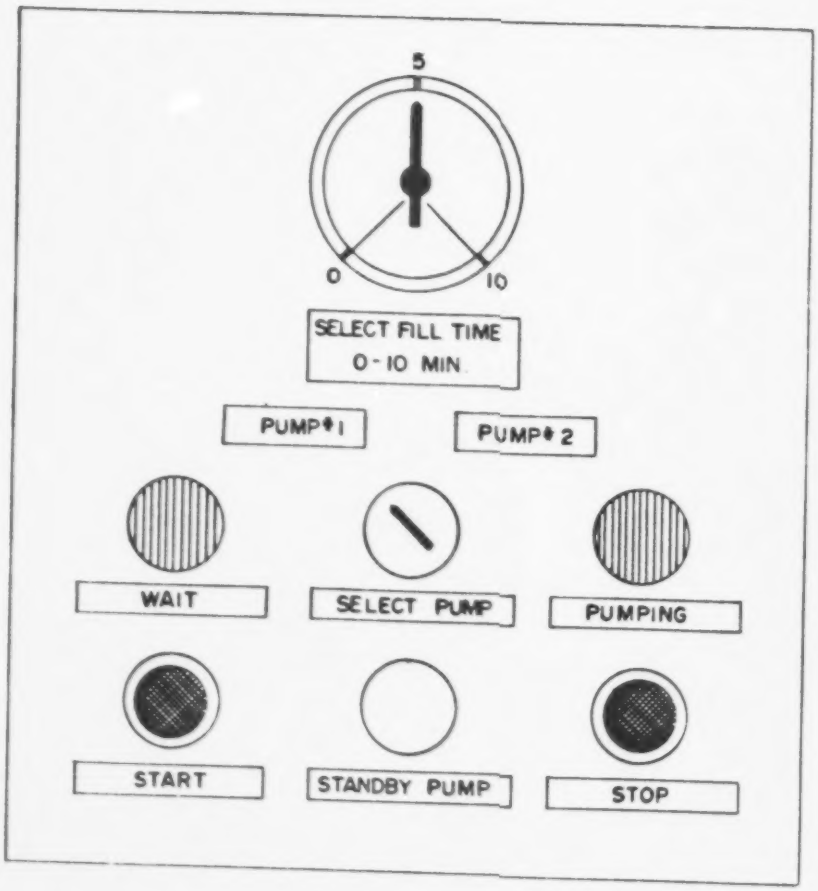
10 CHLORINE PUMP TANK

11 ACCESS PLATFORM

12 ELECTRICAL CONTROLS

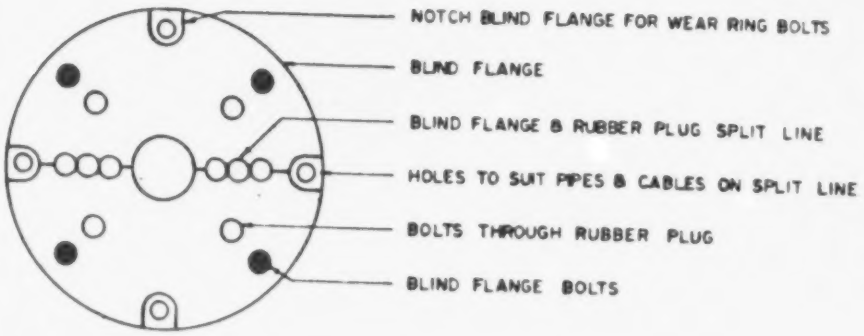
13 SUBDRAIN PUMP SHAFT (IF REQUIRED)

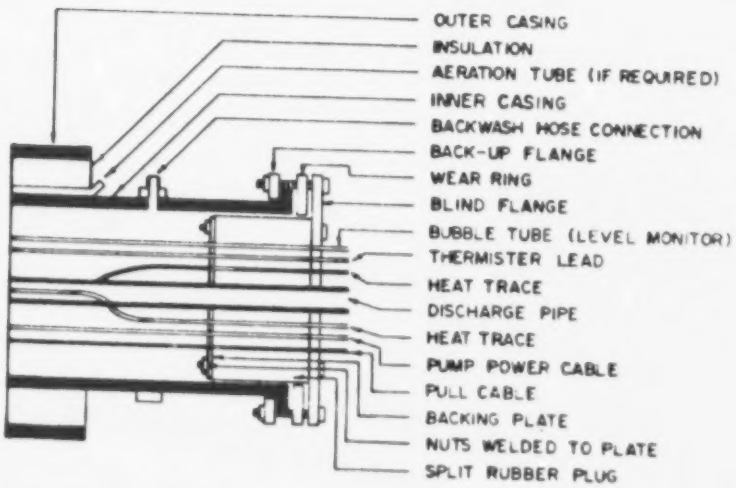
REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS	CHECKED BY
DATE	BY		APPROVED BY
			DRAWN BY C.E.A.
		GOV'T. OF THE N.W.T.	DATE 85/07/25
		TRUCKFILL BLDG. SECTION A-A	SCALE: N.T.S.
			DRAWING NO. TS-2



REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:
DATE	BY		APPROVED BY:
			DRAWN BY: D.W.W
			DATE: APRIL/85
		EXTERIOR CONTROL PNL TRUCKFILL STN	SCALE: N.T.S
			DRAWING NO: TS-3

.../38


NOTCH BLIND FLANGE FOR WEAR RING BOLTS
BLIND FLANGE
BLIND FLANGE & RUBBER PLUG SPLIT LINE
HOLES TO SUIT PIPES & CABLES ON SPLIT LINE
BOLTS THROUGH RUBBER PLUG
BLIND FLANGE BOLTS



REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY
DATE	BY		APPROVED BY
			DRAWN BY: D.W.W.
			DATE: APRIL/85
		INTAKE TERM. TRUCKFILL BLDG	SCALE: N.T.S.
			DRAWING NO: TS-4

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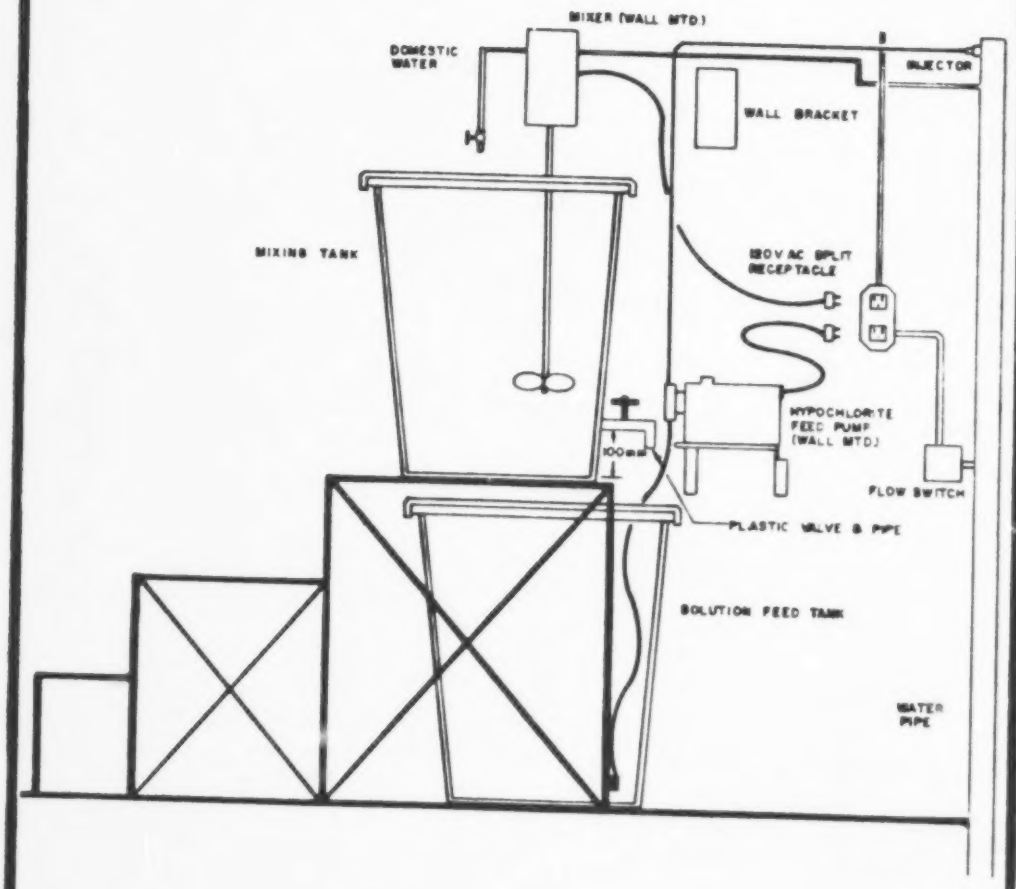
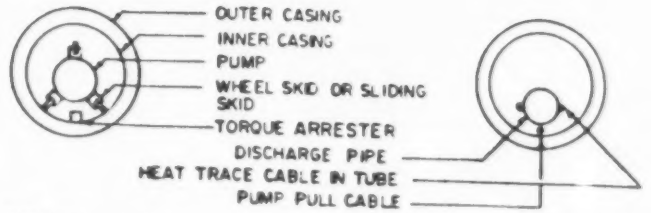


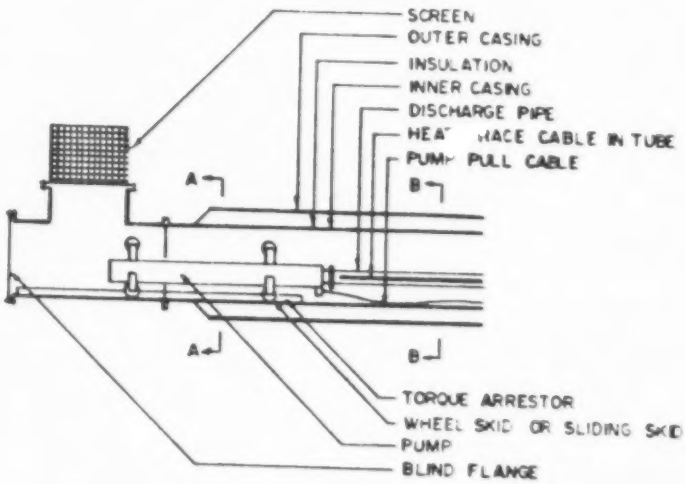
REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY:
DATE	BY		APPROVED BY
			DRAWN BY D.W.W
			DATE: NOV /84
		HYPOCHLORITE FEEDER	SCALE: N.T.S.
			DRAWING NO TS-5

.../40



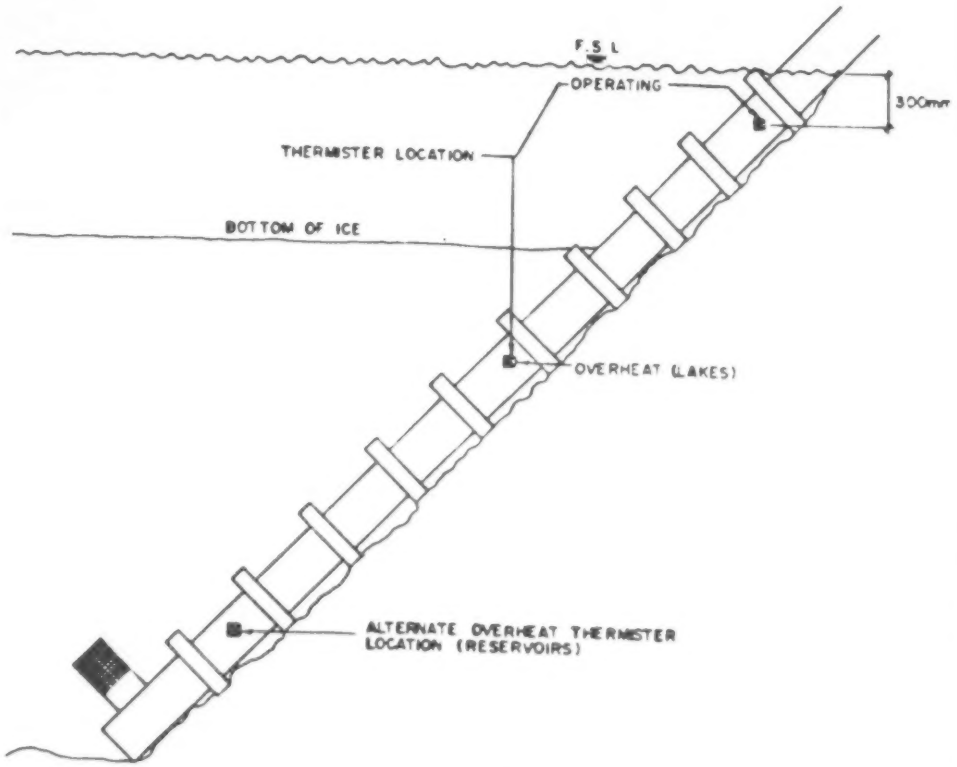
SECTION A-A

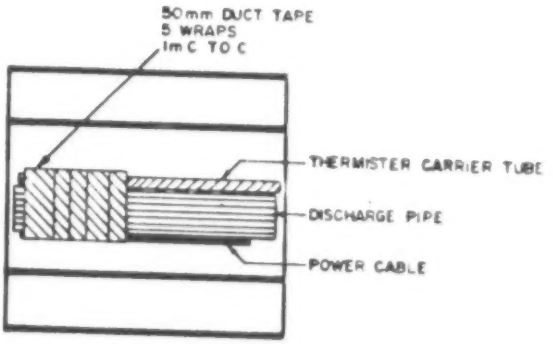
SECTION B-B



RESERVOIR END INTAKE DETAIL

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY
DATE	BY		APPROVED BY
			DRAWN BY D.W.W.
			DATE APRIL / 85
		RES END INTAKE DETAIL	SCALE N.T.S.
			DRAWING NO. TS-6





THERMISTER DETAIL

REVISIONS		DEPARTMENT OF PUBLIC WORKS & HIGHWAYS GOV'T OF THE N.W.T.	CHECKED BY
DATE	BY		APPROVED BY
			DRAWN BY D.W.W.
			DATE AUG/84
		INCLINED SHAFT INTAKE	SCALE N.T.S.
			DRAWING NO. TS-7